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Butter and Nonfat Dry Milk Production in Diversified Plants in:

- **KANSAS,**
- **MISSOURI,**
- **and OKLAHOMA**

Marketing Research ~~Service~~ report No. 430

U. S. DEPARTMENT OF AGRICULTURE
Agricultural Marketing Service
Marketing Economics Research Division

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PREFACE

This report, presenting data on costs of manufacturing butter and nonfat dry milk in six multiple-product processing plants in Kansas, Missouri, and Oklahoma, is one of a series of studies of the pricing of surplus milk in this area. The costs of producing butter and nonfat dry milk and the gross returns from these products have a bearing on the pricing of surplus milk because some of the surplus is made into butter and nonfat dry milk; also, differences in costs and returns from these products may help in understanding why prices paid for milk in this area differ from those in other areas.

This report is based mainly on 1956 data; however, it is believed that present cost relationships are similar to those at the time the study was made. Managers can update these relationships in the light of their own knowledge of recent changes.

Four related reports have preceded this one: The Marketing and Pricing Structure for Bulk Sweet Cream in Kansas, Missouri, and Oklahoma Markets (MRR 74); Prices and Other Payments for Milk by Manufacturers in Kansas, Missouri, and Oklahoma Markets (MRR 81); The Marketing and Pricing Structure for Skim Milk Products in Kansas, Missouri, and Oklahoma Markets (MRR 166); and The Market for Class II Milk in Oklahoma, Kansas, and Western Missouri (MRR 263). Planned future studies include: Market structure for cottage cheese and frozen dairy products; costs in the manufacture of cottage cheese and frozen dairy products in integrated processing plants; prices and other costs of emergency supplies that might be used instead of carrying seasonal reserves; and response of handlers to changes in price levels for milk. Findings on these separate aspects, brought into proper relationship with one another and with the major objectives of pricing milk in the fluid markets of this area, would provide the basis for improvements in the pricing of such milk.

Thanks are due to the managers and personnel of the plants for their cooperation in providing the information used in this report.

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Washington, D. C. September 1960

SUMMARY AND CONCLUSIONS

Average total costs in 1956 for making butter were 58.05 cents per pound and for nonfat dry milk 14.52 cents per pound in 5 dairy plants in Kansas, northwestern Missouri, and Oklahoma, for which comparable data are available. Among these plants, total costs per pound differed by 8.86 cents for butter and by 3.62 cents for nonfat dry milk. Differences in payments for raw materials accounted for most of these variations.

Cost for raw materials was the largest plant cost in the production of butter and nonfat dry milk: 53.43 cents per pound of butter, or 92.0 percent of total butter costs; 7.61 cents per pound of nonfat dry milk, or 52.4 percent of total nonfat dry milk costs.

Operating costs averaged 4.62 cents per pound for butter and 6.91 cents per pound for nonfat dry milk. Among plants, operating costs varied from 8.90 cents to 3.47 cents for butter and from 9.61 cents to 4.25 cents for nonfat dry milk.

Monthly variations in volume of production of butter and nonfat dry milk definitely affected operating costs per pound for these products. Due to the inflexibility of fixed and semifixed plant costs, operating costs varied inversely with variations in production.

The average gross margin available to 4 of the total of 6 plants studied, for processing, selling, delivery, administration, and net margin, averaged only $1.07 per 100 pounds of milk, cream, and skim milk processed. Cost per dollar of sales of $0.998 indicated that these 4 plants were barely able to break even on this margin.

Net margins averaged 1.71 cents per pound for butter and 0.20 cent per pound for nonfat dry milk. Four of the five plants having comparable data made a net return on butter; two of the five made a net return on nonfat dry milk.

During the 6-year period 1953-58, f.o.b. plant prices paid by all plants for manufacturing milk, on a 3.5 percent butterfat basis, averaged 26.0 cents lower in the South Central Region than in Iowa, Minnesota, and Wisconsin. However, because the butterfat content was 0.6 percent higher, the actual price paid per 100 pounds of milk in the South Central Region was 21.0 cents higher than in the more northerly States.

An analysis of some factors which might help explain why the price paid for manufacturing milk (3.5 percent butterfat) is normally lower in the South Central States indicated that:

1. Net prices received in 1956 by plants studied in the South Central area for spray nonfat dry milk were lower than the Chicago wholesale price, but net prices received for roller nonfat dry milk were higher; net prices received for Grade B butter were lower than the Chicago wholesale price, but prices received for Grade A butter were higher. Proportionally, a greater amount of Grade A than of Grade B butter was sold in the South Central area at local retail outlets at higher than the wholesale bulk prices. This probably accounted for part of the higher price received for this grade of butter.

2. Differences such as time period and types of plant limit comparisons of butter and nonfat dry milk costs in these plants and plants in other areas. A comparison of costs, after adjustment for differences in time period only, indicates no major differences in manufacturing costs for butter and nonfat dry milk for comparable sizes of plants in the South Central area and in Minnesota creameries and specialized drying plants.

Small net returns in overall plant operations in the South Central area indicate that these plants could not have paid a substantially higher price for milk.

BUTTER AND NONFAT DRY MILK PRODUCTION IN DIVERSIFIED PLANTS in Kansas, Missouri, and Oklahoma

By W. Webster Jones, agricultural economist
Marketing Economics Research Division
Agricultural Marketing Service

INTRODUCTION

The surplus milk 1/ of fluid milk markets is, in principle, priced on the value of the products manufactured from such milk less the cost of manufacture. In the Federal order markets in Kansas, northwestern Missouri, and Oklahoma, surplus milk prices are established on bases developed in hearing records in each market. The basic objective in the different markets is to price surplus milk at as high a price as possible and still get processors to handle it. This price will, in most cases, tend to be close to the price paid for ungraded milk for manufacturing purposes in the given area. Another method used to estimate what plants can afford to pay for surplus fluid milk is a butter-nonfat dry milk formula. In this formula, various methods and sources of data are used as indicators of the value of the products, yield of products per hundredweight of milk, and manufacturing costs.

The practice of basing prices for Class II milk (surplus fluid milk) on prices paid for milk by local unregulated manufacturing plants has been open to question. This questioning is based on the premise that prices paid for manufacturing milk in this region (fig. 1) have been lower than prices paid for milk for similar uses in the North Central States.

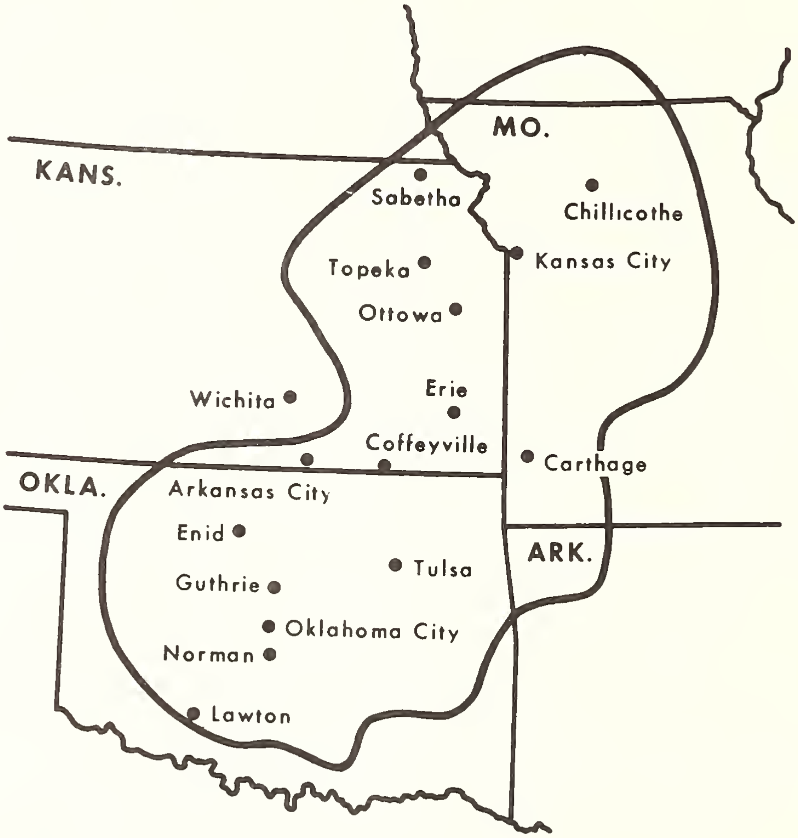
This study was undertaken, therefore, to provide: (1) An analysis of the costs of producing butter and nonfat dry milk in six selected plants in this area; and (2) an explanation of the regional differences in prices paid for manufacturing milk.

Scope of Analysis

The six multiple-product processing plants in this study were visited, and detailed information concerning their facilities and operations was obtained from their records, by observation, and by interview. The data included milk and cream receipts; costs of milk procurement, personnel, machinery and equipment, plant supplies, raw materials (other than milk), utilities (fuel, electricity, water), and general administration; utilization of butterfat and skim milk; and net sales. The data from each plant covered the last fiscal year completed before July 1957. A floor plan of each plant (except one) was drawn and locations of machinery, equipment, and supplies were recorded with the help of the plant superintendent and other plant personnel.

1/ Producers supplying fluid milk markets usually deliver more milk than distributors can dispose of as bottled milk. The excess is commonly referred to as surplus milk, although some portion of the surplus constitutes a reserve against daily and seasonal fluctuations in distributors' sales or receipts of milk. See: "The Marketing and Pricing Structure for Bulk Sweet Cream in Kansas, Missouri, and Oklahoma Markets," by Alexander Swantz, Mktg. Res. Rpt. 74, U. S. Dept. Agr., November 1954, p. 5.

GENERAL MILK SUPPLY AREA
For Specified Multiple-Product Plants, South Central U. S.



DATA FOR 1956

U. S. DEPARTMENT OF AGRICULTURE   NEG. 7950-60 (6)   AGRICULTURAL MARKETING SERVICE

Figure 1

This study begins with the cost of milk and cream and ends with the cost of the finished products at the loading-out platform. Some items of delivery and selling costs were omitted because they could not be allocated satisfactorily. Other delivery and selling costs were deducted from gross sales to get a net sales figure, f.o.b. the producing plant.

This report is based on actual plant costs, which tend to vary among plants for a variety of reasons:

1. Varying use of fully depreciated equipment.
2. Differences in depreciation rates.
3. Variations in the original cost of buildings, machinery, and equipment due to time and locality of purchase.
4. Variations in labor rates.
5. Differences in prices paid for butterfat and skim milk.
6. Differences in rates paid for fuel, water, and electricity.
7. Differences in sizes of plants.
8. Differences in plant and labor efficiency.

No attempt was made to isolate and eliminate the differences in cost that might be attributed to the factors listed.

Methods of Allocating Costs

The plants in this study produced a variety of products; consequently, it was necessary to allocate many items of expense among several products or processes. Many of the costs involved in such operations as receiving, separating, pasteurizing, administration, and office operation are common or joint costs of all or most of the products of each plant. Such costs have been defined as "costs which are incurred for the general operations of the business and are necessary for present and continued production." Also, "Unless the total revenues from all joint products cover all costs, it is desirable, in the long run, to close the plant entirely. There is, of course, no 'true' cost for each joint product, but the methods used by accountants to assign common costs do have limited usefulness." 2/ Methods used in, and assumptions made as a basis for, allocating costs were chosen as seemed appropriate.

The methods used for allocating costs to butter and nonfat dry milk in this study are described in the appendix. In each plant except one, comparable or identical methods were used in allocating the various costs. In the one case, the plant's own method of allocation was used; for this reason, results from this plant differed somewhat from those for other plants.

2/ Devine, Carl Thomas. Cost Accounting and Analysis, MacMillan, New York, 1950. Pp. 564-565.

COMPARISONS OF BUTTER-NONFAT DRY MILK OPERATIONS IN SOUTH CENTRAL AREA AND NORTH CENTRAL AREA

Four of the five Federal milk markets in the South Central area based their Class II prices in 1956 on the average prices paid for manufacturing milk at certain local manufacturing plants. 3/ This method of pricing was based on the premise that Class II milk and manufacturing grade milk were fully competitive for end-product utilization.

In the South Central area, the larger plants for processing manufacturing grade milk are widely scattered, and competition among them for milk may be only one of several factors in the prices paid for such milk. If the prices paid for manufacturing grade milk should be too low, then serious problems may arise when these prices are used in determining the price for surplus whole milk of higher quality which has the alternative function of being a reserve supply for the large fluid milk consuming markets in the area. Low surplus milk prices may encourage processors to divert this milk into the lower use value products, which acts to reduce returns to producers; also, low prices could reduce the amount of fluid milk available below the amount necessary for adequate reserves for Class I sales.

Questions have arisen as to why prices paid for manufacturing grade milk are generally lower in this area than in the more northern States of Iowa, Minnesota, and Wisconsin.

Prices Paid for Manufacturing Milk and Farm-Separated Cream 4/

Plants in the three South Central States paid an average f.o.b. plant price of $3.36 per hundredweight for manufacturing milk of 4.22 percent butterfat during the 6-year period 1953-58, compared to an average of $3.15 for manufacturing milk of 3.62 percent butterfat in the three North Central States. If prices in the two areas are adjusted by using the direct-ratio method of prices paid for milk of 3.5 percent butterfat, the plants in the South Central States paid 26 cents less per hundredweight than the North Central plants. Use of the direct-ratio method tends to exaggerate the cost for butterfat; that is, total cost of the milk is assigned to butterfat alone (table 1). If a skim milk value in both areas of 60 cents per hundredweight is assumed, then prices paid by plants for milk of 3.5 percent butterfat averaged 18 cents per hundredweight less than in the North Central States.

In Iowa, Minnesota, and Wisconsin, the average f.o.b. plant price for farm-separated cream was 64 cents per pound in 1956. This was 12 cents per pound higher than f.o.b. plant prices in Kansas, Missouri, and Oklahoma (table 2). The difference in prices paid by plants in the North Central States and the South Central States is probably due to a difference in cream quality. 4/

3/ For the one exception, the Midwest condensery price or a price computed by a butter-nonfat dry milk formula, whichever was higher, was used.

4/ Cook, Hugh L., Kelley, Paul L., Koller, E. Fred, and Miller, Arthur H., "Butter Pricing and Marketing at Country Points in the North Central Region." Agr. Expt. Sta. Tech. Bul. 203, Univ. Minn., June 1952, pp. 10-11.

Table 1.--Comparison of annual average f.o.b. plant prices paid for manufacturing milk, percentage butterfat, and f.o.b. plant prices paid for manufacturing milk adjusted to a 3.5 percent butterfat basis: Kansas, Missouri, and Oklahoma (area A) and Iowa, Minnesota, and Wisconsin (area B), 1953-58 1/

Year	F.o.b. plant prices for manufacturing milk				F.o.b. plant prices per cwt. milk 2/ (3.5 percent butterfat)	
	Price per cwt. 2/		Butterfat content			
	Area A	Area B	Area A	Area B	Area A	Area B
	Dollars	Dollars	Percent	Percent	Dollars	Dollars
1953	3.53	3.39	4.19	3.64	2.95	3.26
1954	3.22	3.08	4.19	3.64	2.69	2.96
1955	3.33	3.05	4.25	3.60	2.74	2.97
1956	3.38	3.14	4.23	3.62	2.80	3.04
1957	3.36	3.19	4.22	3.63	2.79	3.08
1958	3.32	3.08	4.21	3.60	2.76	2.98
6-year average, weighted	3.36	3.15	4.22	3.62	2.79	3.05

1/ F.o.b. prices paid for milk, weights, and butterfat percentages were obtained from the Agricultural Price Statistics Branch, Agr. Est. Div., AMS, USDA.

2/ Weighted averages.

Table 2.--Monthly and annual average f.o.b. plant prices paid per pound for butterfat in farm-separated cream: Kansas, Missouri, Oklahoma; and Iowa, Minnesota, Wisconsin

Months	Kansas, Missouri, and Oklahoma	Iowa, Minnesota, and Wisconsin
	Dollars	Dollars
December	0.52	0.63
January	.52	.63
February	.52	.63
March	.53	.63
April	.53	.64
May	.52	.64
June	.52	.64
July	.51	.64
August	.51	.65
September	.52	.66
October	.53	.66
November	.53	.66
Average	.52	.64

Source: Agricultural Price Statistics Branch, Agr. Est. Div., AMS, USDA. Data for 1955-56.

Factors Affecting Prices Paid for Manufacturing Milk and Farm-Separated Cream

Several factors may explain why prices paid for manufacturing milk are generally higher (basis, 3.5 percent butterfat) in the North Central States of Iowa, Minnesota, and Wisconsin than in the three South Central States. Indications of the strength of these factors are given by: (1) Differences between net butter prices (f.o.b. plant) received by five plants in this study and the Chicago wholesale prices for butter; (2) differences between net nonfat dry milk prices (f.o.b. plant) received by these plants and average wholesale prices f.o.b. manufacturing plants in the Chicago area; (3) differences in manufacturing costs for butter in these plants and Minnesota creameries; and (4) differences in manufacturing costs for nonfat dry milk in these plants and in specialized drying plants in Minnesota. Some other factors not covered in this report are: (1) Number of available outlets for milk, that is, competition; (2) concentration of supply sources; and (3) quality of products manufactured.

Butter selling prices.--In 1956, except for April and November, no substantial differences existed between (a) the net prices received by the two plants making practically all their butter from farm-separated cream and (b) monthly Chicago wholesale prices for Grade B butter (table 3). 5/ The annual average difference of -0.4 cent per pound could result from transportation costs, although a small percentage of this butter was sold as print butter at local retail outlets at prices higher than the bulk wholesale price.

The net monthly prices received by the three plants making all their butter from sweet cream were higher in all months except May, September, and October than the Chicago wholesale prices for Grade A butter. 6/ The three plants received 1.0 cent per pound more in 1956 than the Chicago price. This may be partly because these plants sold a proportionally greater amount of their Grade A butter at local retail outlets at prices higher than the Chicago price.

Nonfat dry milk selling prices.--The net price received by the two plants making roller nonfat dry milk averaged higher, except for 2 months, than the wholesale prices in the Chicago area (table 4). This indicates "that generally the South Central prices are the Chicago area price plus transportation costs. But during periods of relatively heavy supplies, prices.....may tend to drop to the Chicago price minus transportation costs." 7/

In 7 out of 12 months, the net prices received by the 3 plants making spray nonfat dry milk averaged less than the wholesale prices in the Chicago area. Apparently spray nonfat supplies tended to be relatively heavy throughout the year and the South Central prices were the Chicago area prices minus transportation costs.

Butter manufacturing costs.--Two factors limit comparisons between costs of manufacturing butter and nonfat dry milk in the South Central area and cost

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5/ Butter from farm-separated milk is usually Grade B.

6/ Butter from the plants using sweet cream is usually Grade A.

7/ Preston, Homer J., Swantz, Alexander, and Herrmann, Louis F., "The Marketing and Pricing Structure for Skim Milk Products in Kansas, Missouri, and Oklahoma Markets." Mktg. Res. Rpt. 166, U. S. Dept. Agr., April 1957, p. 9.

Table 3.--Butter: Amounts by which the net prices received by five South Central plants were higher or lower than the Chicago wholesale prices, by grade 1/

Month	Net price difference	
	Grade A butter 2/	Grade B butter 2/
	Cents per pound	Cents per pound
December	3.1	-0.3
January	2.8	- .4
February	1.8	- .3
March	1.3	- .5
April	.4	1.6
May	- .4	- .3
June	.2	- .3
July	1.4	- .3
August	.7	- .4
September	- .3	- .4
October	.0	- .6
November	1.1	-2.3
12-month average, simple	1.0	- .4

1/ Chicago wholesale prices for butter were obtained from Market News Service, AMS, USDA. Data for 1955-56.

2/ Grade A butter amounted to only 19.0 percent of total butter sold and Grade B the remaining 81.0 percent.

Table 4.--Nonfat dry milk: Amounts by which the net price received by the plants were higher or lower than wholesale prices f.o.b. manufacturing plants in the Chicago area 1/

Month	Net price difference	
	Spray nonfat dry milk 2/	Roller nonfat dry milk 2/
	Cents per pound	Cents per pound
December	-1.1	0.5
January	.4	.4
February	.7	1.0
March	-1.1	1.0
April	- .4	.4
May	- .3	-1.2
June	- .4	.5
July	.3	.6
August	.1	.5
September	.2	- .1
October	- .7	.2
November	- .2	.1
12-month average, simple	-1.3	.3

1/ Chicago wholesale prices for nonfat dry milk were obtained from Market News Service, AMS, USDA. The Chicago area comprises the following States: Illinois, Indiana, Michigan, Minnesota, and Wisconsin. Data for 1955-56.

2/ Spray dried nonfat dry milk amounted to 82.4 percent of total powder and roller dried nonfat milk, the remaining 17.6 percent.

studies made in other geographic areas. First, different time periods were covered; second, different types of plants were studied--in the South Central area, the plants had multiple-product operations, while in the other areas the plants had specialized butter and nonfat dry milk operations. These differences do not, however, invalidate comparisons.

Knudtson and Koller 8/ reported average manufacturing costs in 1954 of 7.30 cents per pound of butterfat for 47 Minnesota creameries ranging in size from 300,000 to over 600,000 pounds of butterfat used in making butter. On the basis of an index of costs in specialized butter-nonfat dry milk plants, 9/ the adjusted manufacturing costs for butter as computed by Knudtson and Koller would amount to 7.94 cents per pound of butterfat. Similar average costs in 1956 for five South Central area plants, with butter operations varying in size from 300,000 to 6,000,000 pounds of butterfat, were 5.17 cents per pound of butterfat. This is 2.77 cents less than at the Minnesota plants and is probably due to greater economies of scale in the much larger South Central plants.

Costs (after adjustment of the 1954 data to the 1956 level) reported in the Minnesota study for 15 plants falling within the 300,000-449,000-pound butterfat volume averaged 8.63 cents per pound of butterfat. This compares with 10.32 cents for the one South Central plant falling within this volume range. Since the one plant barely came within the lower part of the volume range, it seems reasonable that the 1.69 cents difference from the average cost for the 15 plants would place this plant within the range of costs for the 15 plants. Average reported costs for the six Minnesota plants in the 600,000-and-over size range were 6.65 cents per pound of butterfat after adjusting to the 1956 level. The one South Central plant falling within this size range 10/ had costs 1.36 cents per pound less than the average for the six Minnesota plants. Again it is reasonable to assume that costs for the one South Central plant would fall within the cost range of the six Minnesota plants. Costs for the three remaining South Central plants were 5 cents per pound of butterfat; these three plants were much larger than the Minnesota plants, averaging approximately 3,000,000 pounds butterfat.

Nonfat dry milk manufacturing costs.--Juers and Koller 11/ reported costs of 3.23 cents per pound for manufacturing nonfat dry milk in 18 Minnesota spray drying plants for 1953. On the basis of the Owens and Clarke index, the adjusted manufacturing costs for nonfat dry milk as computed by Juers and Koller would amount to 3.56 cents in 1956. This is 2.38 cents less than the average cost of 5.94 cents for the South Central plants. Adjusted costs for the Minnesota plants varied from 2.79 to 6.80 cents per pound of nonfat dry milk as compared to 3.92 to 8.74 cents per pound in the South Central plants.

8/ Knudtson, Arvid C., and Koller, E. Fred, "Manufacturing Costs in Minnesota Creameries." Sta. Bul. 442, Agr. Expt. Sta., Univ. Minn., June 1957.

9/ The index used here was developed by C. E. McAllister and D. A. Clarke, Jr., for use in a study titled "Class III Milk in the New York Milkshed, IV Processing Margins for Manufactured Dairy Products," Mktg. Res. Rpt. 419, U. S. Dept. Agr., August 1960, pp. 51-52. Cost items included in the index are those normally incurred in specialized butter-nonfat dry milk operations.

10/ The plant was in the 600,000-749,000-pound range.

11/ Juers, Linley E., and Koller, E. Fred, "Costs of Drying Milk in Specialized Drying Plants." Sta. Bul. 435, Agr. Expt. Sta., Univ. Minn., June 1956.

These differences are largely due to one factor--size of plant. The Minnesota plants varied in size from less than 2.5 million pounds of nonfat dry milk to over 10 million pounds. Plants in this study varied from only 0.6 million to 3.4 million pounds.

Appraisal

Evidence presented previously indicates that plants in the South Central area have generally paid less for manufacturing milk of equivalent butterfat content than have plants located in Iowa, Minnesota, and Wisconsin. This may be caused by (1) differences in net prices received from products manufactured from such milk, (2) differences in costs of processing, (3) size of operations, and (4) pricing of products in multiple-product plants.

Prices received.--Net prices received for Grade B butter were comparable with the Chicago wholesale price less transportation cost. Net prices received for Grade A butter were higher than the wholesale price, possibly due to a greater proportion of this butter being sold locally at higher prices.

After considering transportation charges, net prices received by the plants for spray and roller nonfat dry milk were not out of line with wholesale prices in the Chicago market area.

Costs of processing.--A comparison of manufacturing costs between plants of comparable size in Minnesota and the South Central area does not indicate any major differences in costs of producing butter and nonfat dry milk in the two areas.

Size of operation.--Larger butter operations in plants located in the South Central area resulted in lower unit manufacturing costs; conversely, smaller nonfat dry milk operations in this area resulted in higher unit costs for manufacturing nonfat dry milk.

Pricing of products in multiple-product plants.--The chief aim of management in a multiple-product plant is to make a net return on the overall operation. It is neither necessary nor even wise to try to make a net return on every item produced. Therefore, some items may be produced at a loss, others being counted on to show sufficient returns so that the overall operation is profitable. Consequently, either butter or nonfat dry milk individually or the combined butter-nonfat dry milk operation may or may not show a net return.

GENERAL NATURE OF THE PLANTS

Of the six plants studied, three were operated by farmer cooperatives and three were noncooperatives. Two of the latter were owned by local interests and the third belonged to a national corporate firm.

The six plants received in 12 months 444.3 million pounds of milk, cream, and skim milk, of which the plants' own producers supplied 349.5 million pounds of milk and 22.3 million pounds of farm-separated cream. Receipts from other plants accounted for the remaining 72.5 million pounds: 68.7 million pounds of milk and 3.8 million pounds of cream and skim milk.

Average daily receipts of milk, cream, and skim milk ranged from 1.44 million pounds in May to 1.08 million pounds in October (table 5), a variation of 25.0 percent; the seasonal pattern of receipts varied among the plants (appendix, table 15). Receipts for all plants in September-October-November averaged only 79.3 percent of April-May-June receipts. Greater variations existed among the individual plants--percentage differences among plants for three months of highest and three months of lowest receipts were: 16.9, 24.0, 25.2, 29.4, 29.7, and 39.1.

Approximately equal amounts (42 percent) of total milk receipts were from producers of graded and ungraded milk; the other 16 percent were receipts from other plants (table 6). All but one of the plants received graded milk for fluid consumption. Plants with fluid milk operations received more than enough graded milk from producers for their fluid milk and cream needs, so that about 29 percent of all graded milk received was used in making cottage cheese, ice cream, condensed milk, butter, powder, and other products (table 7). Wide differences existed among plants in the totals of graded milk received and in the proportions of this milk transferred to the manufacturing operations; for all plants, the percentages ranged from 18.0 in October to 35.1 percent in January.

Total available butterfat in milk and cream amounted to slightly over 25.5 million pounds annually. Although only 3 of the 6 plants received farm-separated cream, butterfat from this source amounted to 32.3 percent of total butterfat available to all plants. Butterfat from graded and ungraded producer milk was 26.2 and 27.5 percent of total butterfat, respectively, while butterfat in milk and cream from other plants accounted for the remaining 14.0 percent (fig. 2).

Monthly variations in total butterfat receipts for all plants and among individual plants differ from total milk receipts (appendix, tables 15 and 16). This can be attributed to differences in butterfat content of milk and to the receipts of butterfat in farm-separated cream and cream from other plants. For the three highest and three lowest months, percentage differences among plants in total available butterfat ranged from 19.5 to 35.6, respectively; for total receipts of milk, cream, and skim milk, these percentages were 16.9 and 38.3.

Total nonfat dry milk produced by all plants was 12.5 million pounds. Among plants, production ranged from 0.6 million to 3.4 million pounds.

Wide monthly variations occurred in nonfat dry milk production, especially in the individual plants (appendix, table 17). The period of peak daily production for all plants occurred in May, when the average rose to 54,094 pounds, which was 58.8 percent above the annual average of 34,071 pounds; and production dropped to 14,846 pounds in September, which was 56.4 percent below the annual average (table 8).

Total butter produced by all plants in the 12 months was 18.0 million pounds. Production during May rose to a daily average of 64,118 pounds, which was 30.1 percent above the annual average of 49,297; and dropped in September to 30,739 pounds, which was 56.4 percent below the annual average (table 8). Wide extremes existed among individual plants in butter production (appendix, table 18). Annual production among plants varied from 0.4 to 7.9 million pounds.

Table 5.--Milk, cream, and skim milk: Monthly and annual daily average receipts, 6 plants 1/

Month	Milk	Cream	Skim milk	Total
	Pounds	Pounds	Pounds	Pounds
December	1,078,713	62,092	281	1,141,087
January	1,096,578	58,560	89	1,155,228
February	1,143,834	66,654	---	1,210,488
March	1,176,613	77,798	106	1,254,517
April	1,280,714	82,326	222	1,363,262
May	1,352,652	83,410	272	1,436,334
June	1,275,591	78,268	261	1,354,120
July	1,173,120	72,834	274	1,246,228
August	1,055,314	66,776	9,289	1,131,380
September	1,007,554	57,571	24,983	1,090,107
October	1,019,561	56,401	6,361	1,082,323
November	1,072,090	49,952	150	1,122,192
12-month average, weighted	1,144,205	67,710	352	1,215,432

1/ Data for 1955-56.

Table 6.--Milk receipts: Monthly and annual percentages, by sources, 6 plants 1/

Month	Graded producers	Ungraded producers	Other plants	Total
	Percent	Percent	Percent	Percent
December	47.7	35.1	17.2	100.0
January	46.8	33.6	19.6	100.0
February	44.6	36.9	18.5	100.0
March	41.7	41.9	16.4	100.0
April	39.6	44.1	16.3	100.0
May	35.9	45.7	18.4	100.0
June	34.9	47.5	17.6	100.0
July	35.1	49.1	15.8	100.0
August	37.3	48.2	14.5	100.0
September	42.9	44.2	12.9	100.0
October	48.6	38.6	12.8	100.0
November	49.5	34.7	15.8	100.0
12-month average, weighted	41.7	41.9	16.4	100.0

1/ Data for 1955-56.

Table 7.--Graded milk: Monthly receipts from producers and percentages transferred to manufacturing operation, 6 plants 1/

Month	Graded milk receipts	Transferred to manufacturing
	Million pounds	Percent
December	15.9	35.1
January	15.9	33.2
February	14.6	33.2
March	15.2	26.3
April	15.2	32.0
May	15.1	32.7
June	13.4	28.0
July	12.7	27.3
August	12.2	20.2
September	13.0	18.0
October	15.3	28.7
November	15.9	32.1
12-month total	174.4	29.3

1/ Data for 1955-56.

Table 8.--Butter and nonfat dry milk: Monthly and annual daily average production, 6 plants 1/

Month	Butter	Nonfat dry milk
	Pounds	Pounds
December	50,614	40,873
January	48,057	34,940
February	52,187	35,045
March	52,945	34,899
April	60,473	44,085
May	64,118	54,094
June	58,991	42,597
July	46,181	27,184
August	35,899	16,080
September	30,739	14,846
October	39,326	23,601
November	52,444	40,886
12-month average, weighted	49,297	34,071

1/ Data for 1955-56.

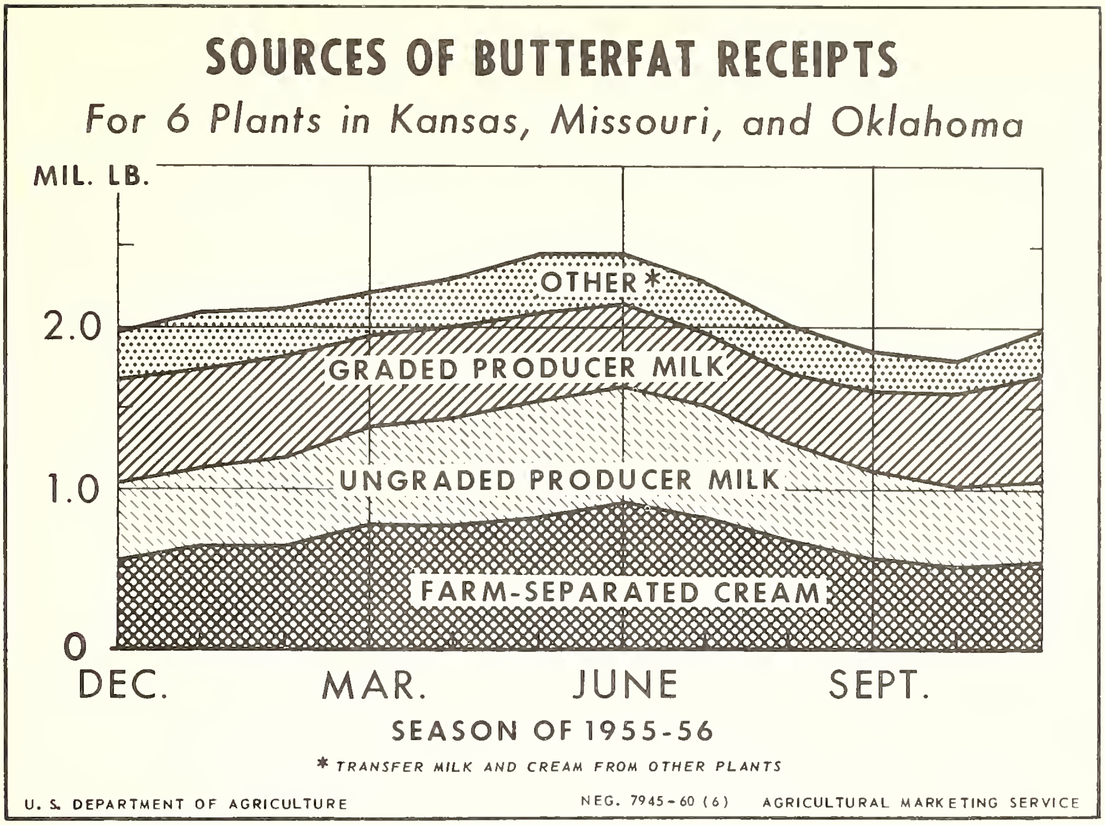

Figure 2

The wide monthly variations in butter and nonfat dry milk production in certain plants results in inefficient use of specialized facilities. In some plants, butter and nonfat dry milk equipment were idle for as long as 1 to 2 months. During this time, specialized labor, such as buttermakers and nonfat dry milk machine operators, were assigned to various other jobs, normally jobs performed by lower priced labor.

The percentages of utilization of total available skim milk in nonfat dry milk and butterfat in butter indicate the importance of these products as outlets for these raw materials (table 9). For all plants, 56.9 percent of the butterfat was used in making butter and 33.8 percent of the skim milk in making nonfat dry milk. Wide differences existed among the plants in percentages of annual receipts of butterfat and skim milk going to butter and nonfat dry milk (appendix, tables 19 and 20). The plants with the most and least output of nonfat dry milk utilized 27.1 and 15.3 percent, respectively, of their total available skim milk in making nonfat dry milk. Monthly changes among the plants in percentages of butterfat and skim milk utilized in making butter and nonfat dry milk show wide differences.

Methods used in making nonfat dry milk varied among the plants. Two of the plants had spray operations, two had roller operations, and two had both spray and roller operations. The two plants having both spray and roller dryers normally used the roller in drying buttermilk only. Skim milk utilized in making nonfat dry milk in plants having spray dryers was condensed before being sent to the dryer. The intermediate step of condensing the skim milk was not used in plants having roller dryers only. Roller-dried nonfat dry milk amounted to only 17.6 percent of total nonfat dry milk produced.

Table 9.--Butterfat and skim milk: Monthly and annual daily averages of available butterfat and skim milk and percentages utilized in making butter and nonfat dry milk, 6 plants 1/

Month	Butterfat		Skim milk	
	Available	Utilized for butter	Available	Utilized for NFDM 2/
	Pounds	Percent	Pounds	Percent
December	64,806	62.8	1,038,841	42.7
January	68,754	56.4	1,055,775	35.9
February	68,996	61.1	1,102,818	34.9
March	73,208	58.3	1,135,543	34.0
April	75,561	64.4	1,223,643	39.7
May	80,574	64.1	1,304,625	45.6
June	80,656	59.1	1,231,299	38.0
July	74,969	50.7	1,133,569	27.2
August	65,996	44.0	1,030,045	17.0
September	60,835	40.8	998,357	16.9
October	59,494	53.1	992,496	26.0
November	64,804	64.0	1,031,886	43.0
12-month average, weighted	69,888	56.9	1,106,441	33.8

1/ Data for 1955-56.
2/ NFDM = nonfat dry milk.

TOTAL PLANT OPERATIONS

The observed plants are multiple-product processing plants with butter and nonfat dry milk as only two of many items in their product lines. A better understanding of the overall operation of the plants can be obtained by an analysis of their overall cost and profit situation. 12/

Total Plant Costs

Total annual costs per hundredweight of milk, cream, and skim milk received averaged $6.40 for five of the plants. Monthly costs varied from $6.88 in November to $6.03 in May (table 10).

12/ Profit or net margin and profitability used in this section may not accurately describe the current legal treatment of farmers' cooperatives. For the cooperatively owned plants, profits or net margins are noncash distributions to patrons' equity reserves or other accounts.

Table 10.--Total plant costs: Monthly and annual weighted average costs per hundred pounds of milk, cream, and skim milk received, 5 plants 1/

Cost items	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	12-mo. average
	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.
Raw materials:													
Milk, cream, skim milk 2/	5.37	5.10	5.43	4.98	4.87	4.94	4.95	5.04	5.04	5.04	5.18	5.35	5.11
Raw materials (other than milk)	.03	.04	.04	.03	.04	.03	.04	.03	.04	.05	.05	.05	.04
Total raw materials	5.40	5.14	5.47	5.01	4.91	4.97	4.98	5.08	5.07	5.09	5.23	5.40	5.15
Plant operation:													
Receiving, processing, and storing:													
Inplant labor	.36	.31	.33	.31	.30	.29	.31	.32	.34	.34	.35	.36	.32
Utilities (fuel, water, electricity)	.08	.08	.07	.06	.06	.05	.06	.06	.06	.06	.06	.07	.06
Maintenance materials and purchased services	.03	.03	.03	.03	.05	.03	.03	.05	.02	.02	.03	.03	.03
General plant supplies	.06	.04	.05	.04	.04	.04	.04	.05	.05	.06	.05	.05	.05
Packaging supplies	.19	.17	.20	.17	.19	.17	.16	.16	.15	.18	.24	.23	.18
Building (depreciation, rent, real estate tax, etc.)	.04	.04	.04	.03	.04	.03	.03	.04	.04	.04	.04	.04	.04
Machinery and equipment	.07	.06	.06	.06	.06	.06	.06	.06	.07	.07	.07	.07	.06
Total	.82	.73	.78	.70	.73	.66	.70	.73	.73	.77	.84	.85	.74
Administrative (labor, office expense, etc.)	.20	.17	.18	.15	.16	.14	.14	.15	.17	.18	.20	.21	.17
Selling and delivering (labor, truck expense, etc.)	.38	.34	.38	.32	.29	.26	.30	.32	.36	.37	.40	.42	.34
Total plant operation	1.40	1.24	1.34	1.17	1.18	1.06	1.14	1.20	1.26	1.32	1.44	1.48	1.25
Grand total cost 3/	6.80	6.38	6.81	6.18	6.09	6.03	6.12	6.28	6.33	6.41	6.67	6.88	6.40

1/ Data for 1955-56. 2/ Includes hauling, fieldmen, etc. 3/ Due to rounding, totals do not always equal sum of parts.

Raw materials.--The cost of raw materials 13/ used in the manufacture of the various products was the greatest of all plant costs, amounting to $5.15, or 80.5 percent of total costs. The unit cost of raw materials showed less monthly variation than any of the other cost items, varying only from $5.40 in February to $4.91 in April.

Raw material costs for plant D constituted a considerably lower proportion of total plant costs than it did in the other plants (table 11). This is largely due to the considerably higher costs involved in packaging, selling, and delivery.

Plant operations.--Receiving, processing, and storing costs amounted to $0.74 per 100 pounds of milk, cream, and skim milk received. Thus, inplant costs consisted of 11.6 percent of total costs.

Table 11.--Total plant costs: Percentage distribution by certain cost functions, 5 plants 1/

Cost functions	Plants 2/					
	A	B	C	D	E	Total
	Percent	Percent	Percent	Percent	Percent	Percent
Procurement	83.06	83.35	78.51	65.86	87.09	80.47
Raw materials (milk, cream, skim milk, etc.) 3/	80.48	79.94	76.24	65.43	85.85	78.12
Other (hauling, fieldmen, etc.)	2.58	3.41	2.27	.43	1.24	2.35
Receiving, processing, and storing	11.37	9.49	12.95	17.63	8.15	11.56
Inplant labor	5.98	4.02	6.55	4.76	3.00	5.00
Utilities (fuel, water, electricity)	.96	.57	1.99	1.00	.82	.94
Maintenance materials and purchased services	.91	.44	.06	.58	.22	.47
General plant supplies	.61	.57	.97	.81	.97	.78
Packaging supplies	1.74	2.96	1.49	7.95	.30	2.81
Building (depreciation, rent, real estate tax, etc.)	.40	.33	.82	1.00	.82	.62
Machinery and equipment	.77	.60	1.07	1.53	2.02	.94
Administrative (labor, office expense, etc.)	2.40	2.22	2.74	3.59	3.09	2.66
Selling and delivering (labor, truck expense, etc.)	3.17	4.94	5.80	12.92	1.67	5.31
Total	100.00	100.00	100.00	100.00	100.00	100.00

1/ Data for 1955-56.
2/ Costs for plant F could not be broken down into this grouping.
3/ Includes raw materials other than milk.

13/ Includes cost of milk, cream, skim milk; procurement; and other ingredients.

Monthly costs for all plants varied from 13.3 percent above the annual average in November to 12.0 percent below in May. A breakdown of the $0.74 for receiving, processing, and storage into the individual cost items shows that plant labor made up 43.2 percent of the total, with packaging supplies as the second highest at 24.3 percent. Machinery and equipment costs and utilities costs amounted to 16.2 percent--8.1 percent each.

Among plants, costs of receiving, processing, and storing varied from 17.6 percent for plant D to only 8.2 percent for plant E.

Selling, delivering, and administrative.--Selling, delivering, and administrative costs approximated 8.0 percent of total costs or $0.51 per 100 pounds of milk, cream, and skim milk received. The 8.0 percent consists of 5.3 percent for selling and delivery, and 2.7 percent for administrative costs. Administrative costs, which averaged $0.17, varied from $0.21 in November to $0.14 in May and June. Selling and delivery costs averaged $0.34 and ranged from $0.42 in November to $0.26 in May.

Among plants, selling and delivery costs varied from 12.9 percent of total costs for plant D to only 1.7 percent for plant E. Administrative costs showed less variation, from only 2.2 percent for plant B to 3.6 percent for plant D.

Net Returns from Plant Operations [14]

The net returns from the combined butter and nonfat dry milk operations in the diversified plants give only an indication of the profitability of the overall operations of the plants, because only about 57 percent of the butterfat and 34 percent of the skim milk were used in making butter and nonfat dry milk. The remaining amounts of butterfat and skim milk were used for other products.

Cost per dollar of sales.--Cost per dollar of sales is one method of comparing the net return of each plant with the combined total for all plants. Dividing total costs by total net sales provides a ratio for the total cost involved in making each dollar of sales. Variations among plants in the cost per dollar of sales explain, in part, differences in costs and returns in each plant's operation and differences in levels of efficiency in operation.

The cost per dollar of sales for all plants was $0.998, indicating that a slightly better than breakeven point was achieved (table 12). Complete data were available for 4 plants. Plant E had the highest costs per dollar of sales, $1.11; plant B had the lowest costs, $0.98.

Average costs per dollar of sales for all plants were lowest during April-May-June, the period of highest receipts of milk, cream, and skim milk. The coinciding of the period of highest receipts with the period of lowest cost-sales ratio did not hold true in the case of some plants, for plant C especially.

Gross margin.--The gross margin [15] available for processing, selling, delivery, administrative expense, and net margin in the four plants averaged only $1.07 per 100 pounds of milk, cream, and skim milk received (table 13).

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[14] See footnote 12, p. 17.

[15] Difference between net sales and cost per 100 pounds of milk, cream, and skim milk received at the plants.

Table 12.--Cost per dollar of sales, 4 dairy plants 1/

Month	Plants 2/				
	A	B	C	E	All plants 3/
	Dollars	Dollars	Dollars	Dollars	Dollars
December	1.04	0.99	1.01	1.12	1.02
January	1.04	1.00	1.04	1.11	1.03
February	1.03	1.01	1.01	1.14	1.03
March	1.00	.96	1.01	1.17	1.00
April	1.00	.95	.99	.95	.97
May	.94	.97	.96	.96	.96
June	.94	.96	1.00	1.16	.98
July	.98	.98	.99	1.28	1.02
August	.98	.95	.97	1.20	.99
September	1.03	.97	.96	1.35	1.02
October	.95	.98	.94	1.00	.97
November	1.01	1.03	1.00	.94	1.01
12-month average, weighted	.99	.98	.99	1.11	.998

1/ Includes sales of dairy products plus sales from sideline enterprises, such as eggs, feed, etc. Data for 1955-56.

2/ Plants D and F were omitted due to insufficient information.

3/ Weighted averages.

Table 13.--Gross margins per 100 pounds of milk, cream, and skim milk received, 4 dairy plants 1/

Month	Plants				
	A	B	C	E	All plants 2/
	Dollars	Dollars	Dollars	Dollars	Dollars
December	0.68	2.32	1.21	0.22	1.05
January	.64	1.99	.96	.20	.93
February	.70	1.86	1.11	.06	.93
March	.72	2.23	.94	- .12	.94
April	.69	2.41	1.04	.87	1.14
May	.94	2.05	1.13	.76	1.17
June	.94	2.46	1.05	.07	1.08
July	.80	2.11	1.12	- .50	.90
August	.78	2.74	1.37	- .29	1.10
September	.62	2.74	1.38	- .67	.96
October	1.04	2.92	1.45	.74	1.45
November	.87	2.11	1.10	1.21	1.20
12-month average, weighted	.79	2.31	1.15	.15	1.07

1/ Gross margin = net sales less cost of milk, cream, and skim milk and cost of assembly. Data for 1955-56.

2/ Weighted averages.

This gross margin was lowest in July at $0.90 and highest in October at $1.45. During April-May-June, when receipts of milk, cream, and skim milk were highest, gross margin averaged about $1.13.

Wide monthly variations in gross margin existed among the individual plants, varying from $2.31 for plant B to only $0.15 for plant E. The $1.11 cost per dollar of sales for plant E indicated that this plant was unable to operate on the $0.15 gross operating margin and thus incurred a loss for the period.

The differences in margins among plants were due to (1) differences in prices paid for inputs, (2) differences in prices received for outputs, and (3) differences in levels of efficiency in plant operation.

Butter-Nonfat Dry Milk Operations

Butter operation.--Net dollar margins 16/ realized by the five plants on their butter operations for the year averaged 1.71 cents per pound of butter produced (table 14). Among the plants, the net margins varied from a minus 5.95 cents for plant D to a plus 5.10 cents for plant A. For all plants, the net margin varied from 3.51 cents in April to minus 0.03 cent in February--the only month when they operated at a loss. Monthly variations in net margins among plants were considerable. The month-to-month changes in the net margin reflect changes in volume of production and in efficiency of plant operation.

Nonfat dry milk production.--Net margins from nonfat dry milk production were less than the net margins from butter production. Average net margin on total nonfat dry milk produced in the five plants was only 0.20 cent per pound. Among the plants, the net margin varied from minus 1.16 cents for plant D to 1.54 cents for plant B. Monthly variations in the net margin were greater for nonfat dry milk than for butter, both for the five plants combined and, in most cases, for the individual plants. This resulted from greater variations in volume of production and levels of efficiency.

Effect of Allocation Procedures on Net Margins from Butter-Nonfat Dry Milk Operations

While the allocation procedures used in this report were those considered most applicable, it is recognized that other procedures could have been employed. But the use of other allocation procedures would have had little effect on total costs for butter and nonfat dry milk.

Allocation of raw whole milk cost to butter and nonfat dry milk was the most difficult. The use of other allocation procedures may shift the proportion of the total cost of the milk from butterfat to skim milk or vice versa, but the overall cost of raw materials for butter and nonfat dry milk, combined, would not change. For example, assume that a plant paid $3.20 for milk of 4.0 percent butterfat and that $2.56 of this cost is allocated to butterfat and $0.64 to skim milk. If, by using another method, $2.20 were allocated to butterfat and $1.00 to skim milk, this would have changed the cost per pound of butterfat from

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16/ Net before income tax, if any. Also includes any return from buttermilk.

Table 14.--Butter-nonfat dry milk: Net margins per pound of each product produced, 5 plants 1/

Month	Plants											
	A		B		C		D		E		All plants 2/	
	Butter	NFDM 3/	Butter	NFDM 3/	Butter	NFDM 3/	Butter	NFDM 3/	Butter	NFDM 3/	Butter	NFDM 3/
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
December ..	4.06	0.64	0.37	1.23	1.87	-2.04	-5.90	0.49	2.06	-1.76	1.29	0.13
January ...	.05	- .74	- .83	1.68	2.03	1.16	-4.71	-5.38	3.79	-1.44	.21	.06
February ..	- .47	-1.54	- .96	1.99	2.13	1.25	-4.74	-1.47	3.11	-5.60	- .03	.46
March	3.08	- .34	1.24	2.70	1.96	1.05	-8.25	-5.59	4.19	.89	1.57	.29
April	4.57	- .44	3.65	2.79	2.63	2.41	-5.22	- .39	5.74	2.61	3.51	1.31
May	7.65	1.94	.84	2.91	3.62	1.50	-6.26	3.39	7.58	1.58	2.44	2.00
June	6.73	.81	2.20	1.94	2.69	.47	-10.95	2.84	3.92	-4.15	2.51	.83
July	4.57	-4.09	- .34	1.81	1.87	.32	-4.30	-5.83	-20.16	4/	.14	-1.03
August	-12.41	-8.68	1.39	- .33	4.67	-1.14	-2.26	-1.38	4/	15.26	.37	-3.19
September	-2.79	-12.33	1.78	-10.11	2.24	- .74	.07	-3.34	4/	144.25	1.62	-4.45
October ...	7.06	-2.22	1.64	-1.12	1.27	.82	-4.83	.12	5.42	-2.66	2.45	- .47
November ..	6.32	.79	1.10	-2.61	3.68	- .06	-2.81	- .90	3.83	.62	2.86	.09
12-month average, weighted	5.10	- .24	1.06	1.54	2.21	.46	-5.93	-1.16	4.18	- .94	1.71	.20

1/ Net before income tax, if any. Data for 1955-56.
2/ Weighted averages.
3/ NFDM = nonfat dry milk.
4/ No product produced.

$0.640 to $0.550 and of skim milk from $0.0067 to $0.0104. This substantial shift of costs from butterfat to skim milk would likely result in a loss on the nonfat dry milk operation, but would cause no change in the net margins on the overall butter-nonfat dry milk operation.

The second most difficult allocation made was of indirect labor and facilities costs. However, raw materials and direct costs (labor, machinery and equipment depreciation, packaging supplies) accounted for 96 percent of the total cost of producing butter and 64 percent for nonfat dry milk; therefore, procedures used in allocating indirect costs affected only 4 percent of total butter costs and 36 percent of total nonfat dry milk costs.

Only minor differences would have resulted in total costs if different allocation procedures were used. For example, an extreme variation of 10 percent (plus or minus) in the total indirect costs would result in changes of 0.25 cent per pound for butter and 0.52 cent per pound for nonfat dry milk. While this would have resulted in a loss for the nonfat dry milk operations, it is doubtful that other allocation procedures would have caused this much change.

COSTS OF PRODUCING BUTTER AND NONFAT DRY MILK

Butter and nonfat dry milk were only two of the products processed in the six plants. Returns from sales of butter were about 38 percent of total sales; returns from sales of nonfat dry milk were about 7 percent. Costs of producing butter and nonfat dry milk were also about 38 percent and 7 percent, respectively, of total plant costs. Costs included were all those directly and indirectly involved in the butter and nonfat dry milk operations. Costs excluded were those connected with delivery of butter and nonfat dry milk in the plants' own trucks.

Seasonal variations in the production of butter and nonfat dry milk differ widely among the plants (appendix, tables 17 and 18). The least variations in butter production occurred in those plants which produced butter largely from farm-separated cream; greatest variations occurred in those plants producing butter and nonfat dry milk mostly from whole milk. In the latter plants, butter and nonfat dry milk were largely residual uses of fluid milk or milk for other higher value uses. Receipts of milk varied considerably more seasonally than did the amounts utilized in the higher value uses; consequently, there were wide seasonal variations in the amounts of milk used in making butter and nonfat dry milk.

Variability in the amounts of butter and nonfat dry milk produced resulted in variability in unit operating costs (appendix, tables 21 and 22). Many plant facilities costs tend to remain fixed and, in a short period such as a year, do not change regardless of the amount of butter and nonfat dry milk produced. In addition, some costs, such as those for labor, utilities, and certain purchased services and supplies, do not vary directly with volume of production. When production varies, these costs also vary, but by smaller amounts. The fixed and semifixed plant costs cause substantial seasonal variations in unit costs.

Butter

Total costs of producing a pound of butter, for all six plants, averaged 57.99 cents (appendix, table 34). Costs in five of the six plants averaged 58.05 cents per pound (fig. 3). 17/ Percentagewise, total costs for the five plants consisted of: Raw materials, 92.0 percent; labor, 4.5; purchased services and supplies, 2.5; and utilities, 1.0. In terms of cost functions, total costs consisted of: Procurement, 92.8 percent; processing, 5.2; administrative, 1.7; and receiving, 0.3 (appendix, tables 39-42).

Cost elements.--For four of the plants, most of the butterfat used in making butter came from plant-separated cream. Cream costs plus costs of other minor raw materials averaged 53.43 cents per pound (fig. 3). The remaining costs of production--operating costs--averaged 4.62 cents per pound.

Labor involved, directly and indirectly, was the largest of the plants' operating costs. Labor costs averaged 2.59 cents per pound, or 56 percent of total operating costs.

Purchased services and supplies averaged 1.43 cents per pound of butter, or 31 percent of total operating costs.

Cost of facilities was the smallest. For all plants, this cost averaged only 0.60 cent per pound, or 13 percent of total operating costs.

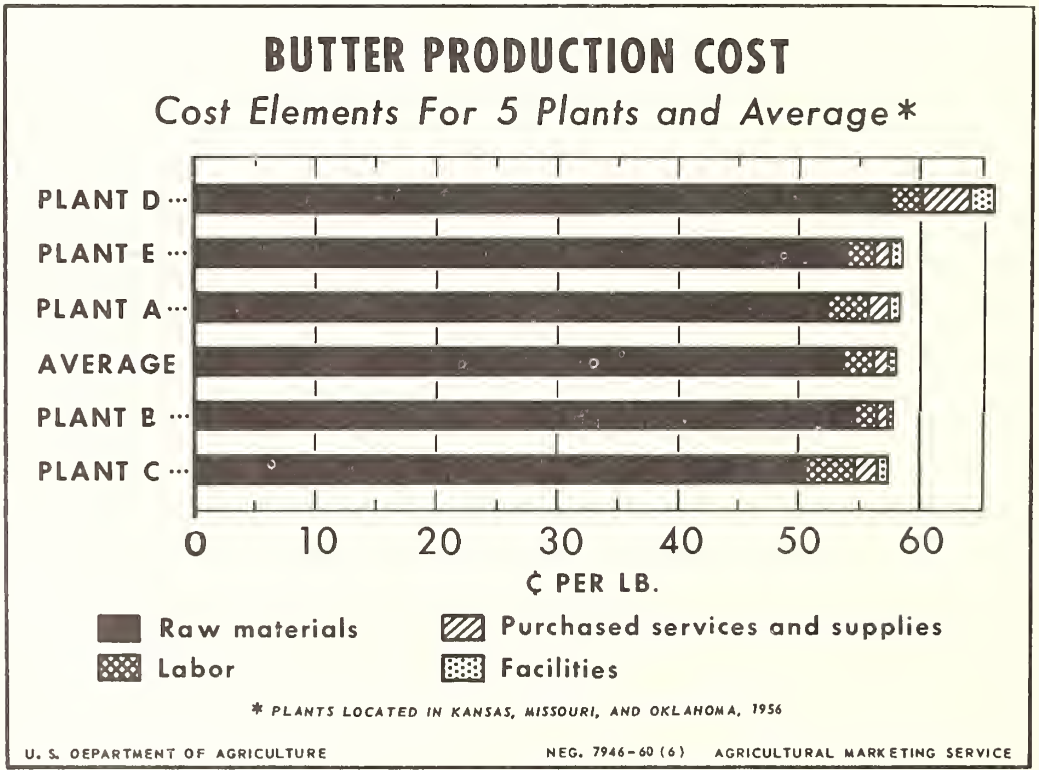

Figure 3

17/ Some of the costs in one plant could not be broken down into cost groupings comparable to the ones used in this report.

Cost functions.--Procurement costs--the total f.o.b. plant cost of raw materials--averaged 53.87 cents per pound of butter. Cost of procurement, other than raw materials, was only 0.44 cent per pound, or 0.8 percent of total procurement costs (appendix, table 39).

Processing costs averaged 2.99 cents per pound. The processing cost function consisted of costs for cream separation, pasteurizing, and processing; buttermaking; printing; packaging; storage; and loading out.

Administrative costs averaged 1.01 cents per pound of butter. These costs were all indirect and included office expenses and administrative salaries.

Receiving, the smallest cost function in buttermaking, averaged only 0.18 cent per pound of butter. Cost items included in receiving were labor, facilities, and purchased services and supplies.

Comparisons of costs among plants (fig. 3).--Plant C had the smallest total costs for producing butter--0.86 cent below the average of 58.05 cents per pound. Cost of raw materials was 2.98 cents below average, but this was mostly offset by above-average operating costs for all cost elements and functions. Other cost elements were 2.12 cents more than the average of 4.62 cents for all plants.

Plant B's costs were 0.19 cent below average. Raw materials cost of 0.96 cent above average was more than offset by other cost elements, which were 1.15 cents below average. Plant B was the most efficient plant; its operating costs were below average for all functions except administration.

Plant A had total costs that were 0.12 cent above average. This plant's raw materials cost was 1.35 cents lower than average, but other costs were all above average. Operating costs were high: Processing costs were 1.00 percent higher than average, primarily because of high labor costs.

Plant E's total costs were 0.42 cent above the average of all plants. Costs for raw materials were 0.33 cent above average. Particularly contributing to higher costs were facilities, which were 0.47 cent above average. Low receiving costs in this plant were more than offset by higher than average procurement and administrative costs.

Plant D had the largest cost of any plant--8.00 cents above average. Raw materials costs were 3.72 cents above average, and other costs 4.28 cents above average. Processing and procurement costs, in particular, were substantially higher than in any other plant.

Seasonality.--Except for January and February, unit operating costs for producing butter varied inversely with volume of butter produced (fig. 4). Costs in April-May-June, the months of highest production, were 1.46 cents lower than in August-September-October, the months of lowest production.

Plant B had the smallest monthly changes in volume of butter production, and had the smallest monthly variation in unit operating costs. Costs in this plant varied from a high of 4.48 cents in October to a low of 2.85 cents in May. Plant E had the greatest monthly variation in volume of production and had the greatest monthly variation in costs. For this plant, operating costs varied

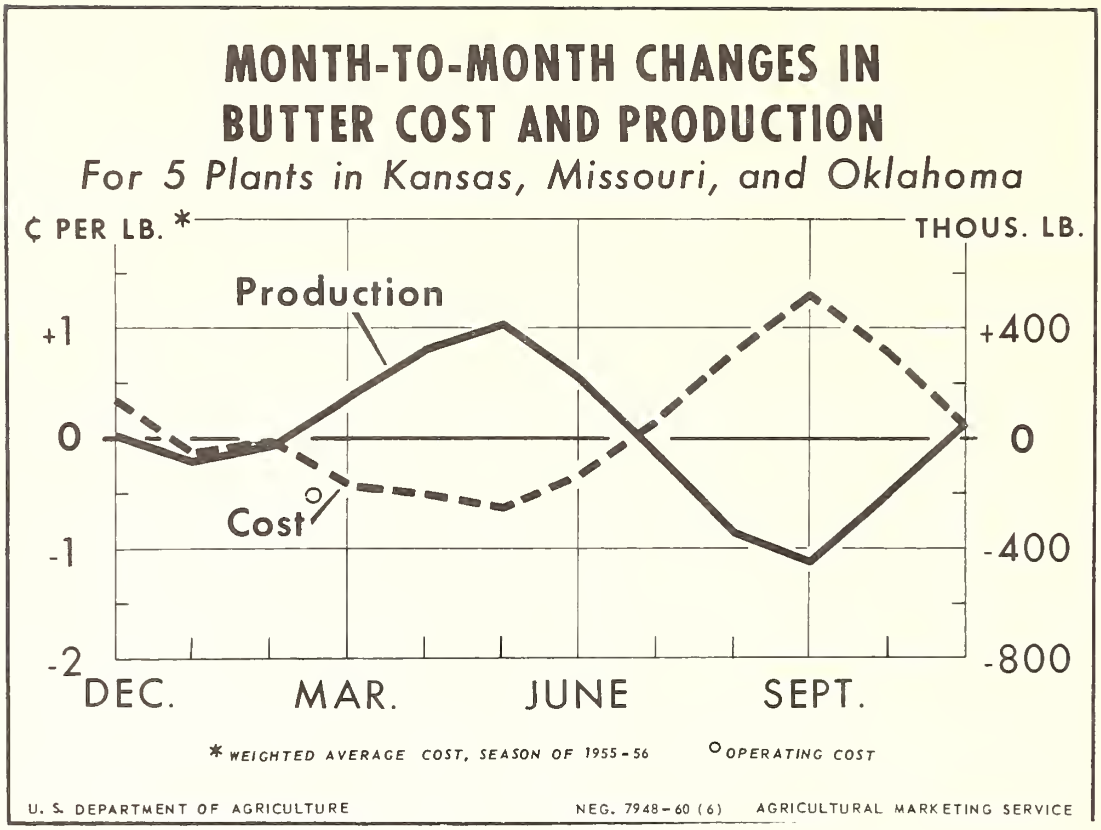

Figure 4

from a low of 3.83 cents in January to a high of 31.82 cents in July (there was no production in August and September). For more detail on the effects of seasonal changes in the volume of production on operating costs among plants see the appendix, tables 21 and 23. Monthly costs per unit of production for the individual plants were highly variable. Extreme monthly variations in unit operating costs were mostly the result of spreading certain fixed annual building and equipment costs on an equal basis over the 12 months.

Nonfat Dry Milk

Total costs of producing a pound of nonfat dry milk, for all six plants, averaged 13.44 cents. Costs in five of the six plants averaged 14.52 cents per pound (fig. 5). 18/ On a percentage basis, total costs for the five plants consisted of raw materials, 52.4 percent; labor, 22.9; purchased services and supplies, 15.3; and facilities, 9.4. In terms of cost functions, total costs consisted of procurement, 55.6 percent; processing, 31.5; administrative, 8.1; and receiving, 4.8 (appendix, tables 30-33).

Cost elements.--The cost of skim milk used in making a pound of nonfat dry milk was 7.61 cents for the five plants. The remaining cost of production--operation costs--averaged 6.91 cents.

18/ See footnote 17, page 28.

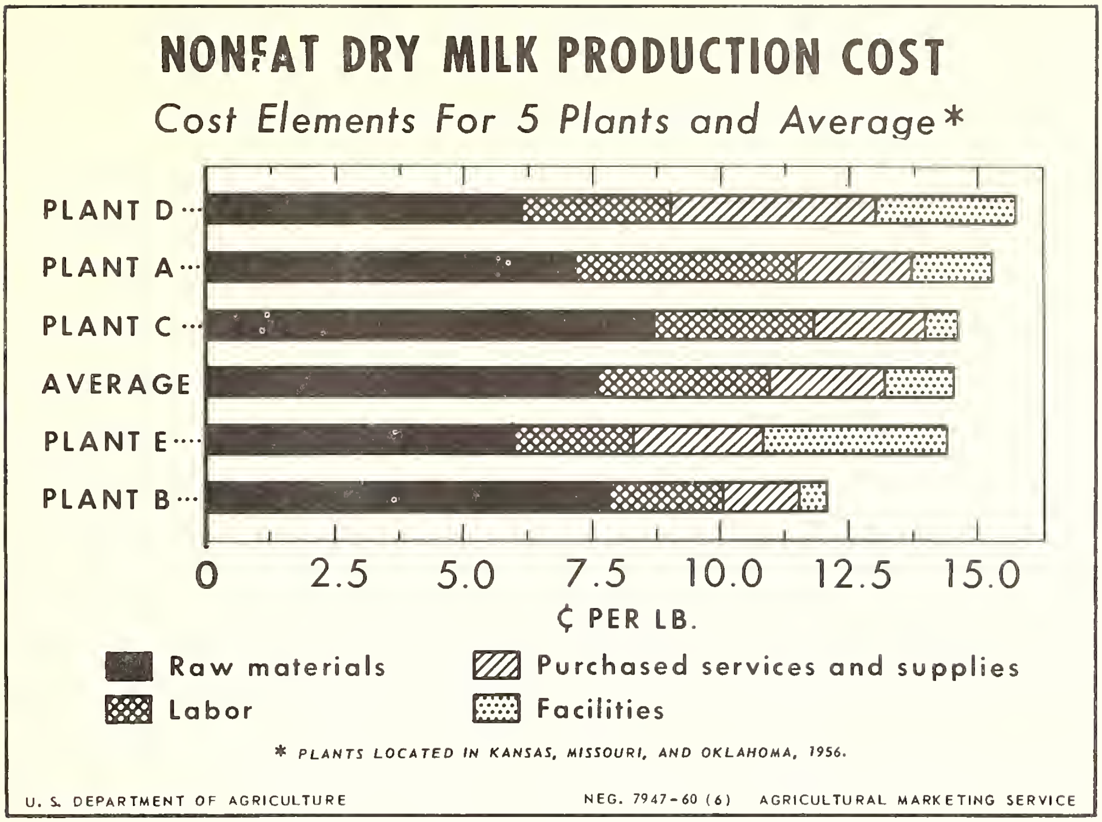

Figure 5

Labor involved, directly and indirectly, was the largest cost in the nonfat dry milk operation. Labor costs averaged 3.32 cents per pound, or 48.0 percent of total operating costs.

Purchased services and supplies averaged 2.23 cents per pound of nonfat dry milk. This was 32.3 percent of total operating costs.

Cost of facilities was the lowest cost in making nonfat dry milk. Facilities costs averaged 1.36 cents per pound, or 19.7 percent of total operating costs.

Cost functions.--Procurement costs--total f.o.b. cost of the raw materials--averaged 8.08 cents per pound of nonfat dry milk. Costs of procurement, other than raw materials, averaged only 0.47 cents, or 5.8 percent of total procurement costs (appendix, table 30).

Processing costs averaged 4.57 cents per pound of nonfat dry milk manufactured. Costs included in the processing function were separating, condensing, drying, bagging or packaging, storing, and loading out.

Administrative costs averaged 1.17 cents per pound of nonfat dry milk. These costs were all indirect and included office expenses and administrative salaries.

The smallest cost function in the nonfat dry milk operation was receiving, averaging only 0.70 cent per pound of nonfat dry milk. Cost items included in receiving were labor, facilities, and purchased services and supplies.

Comparison of costs among plants (fig. 5).--Plant B had the smallest total costs for producing nonfat dry milk--2.42 cents below the average of 14.52 cents per pound. Costs for raw materials--skim milk--were 0.24 cent above average, but more than offsetting this were the other cost elements, which were 2.66 cents lower than average. Processing costs, in particular, were lower than in any other plant.

Plant E's total cost of producing nonfat dry milk was only 0.17 cent per pound less than average. Particularly contributing to the lower than average costs were the costs of raw materials and labor, which were 2.64 cents lower than average. Higher than average costs, especially for facilities, largely offset these lower costs; also, the high cost of facilities contributed to higher than average processing costs.

Plant C had total costs for producing nonfat dry milk that were only 0.08 cent per pound higher than average. Raw material costs for this plant were 1.05 cents above average, the highest among the plants; this was partially offset by smaller than average operating costs. Costs of processing were lower than average in this plant, largely due to considerably lower costs of facilities.

Plant A had total nonfat dry milk production costs that were 0.73 cent higher than the average. Raw materials costs were 0.42 cent smaller than average, but this was more than offset by labor costs that were 0.92 cent larger. Processing costs were 1.23 cents above average, largely due to higher costs for labor and facilities.

Plant D's total costs were higher than those of any other plant--1.20 cents above average. Although raw materials costs were considerably below average--by 1.50 cents--purchased services and supplies and facilities costs were considerably above average. Large processing and administrative costs indicate that, except for receiving, this was the least efficient plant.

Seasonality.--In the nonfat dry milk operations, as in the butter operations, an inverse relationship existed between cost and volume (fig. 6). Monthly production and unit costs both varied more for nonfat dry milk than for butter. A difference in operating costs of approximately 4 cents per pound existed between the high (April-May) and the low (August-September) production periods.

Plant C had the least month-to-month changes in volume of production and unit operating costs (appendix, table 24); costs in this plant varied from a high of 7.18 cents in August to a low of 5.10 cents in May. Plant E had the greatest monthly variation in volume of production and in unit operating costs; for this plant, unit operating costs varied from a low of 5.50 cents in April to 45.48 cents in September (there was no production in July). For more detail on the effects of seasonal changes in the volume of production on operating costs among plants, see the appendix, tables 22 and 24. Monthly unit operating costs among plants were highly variable. Extreme monthly variations in unit operating costs were mostly the result of spreading certain fixed annual building and equipment costs on an equal basis over the 12 months.

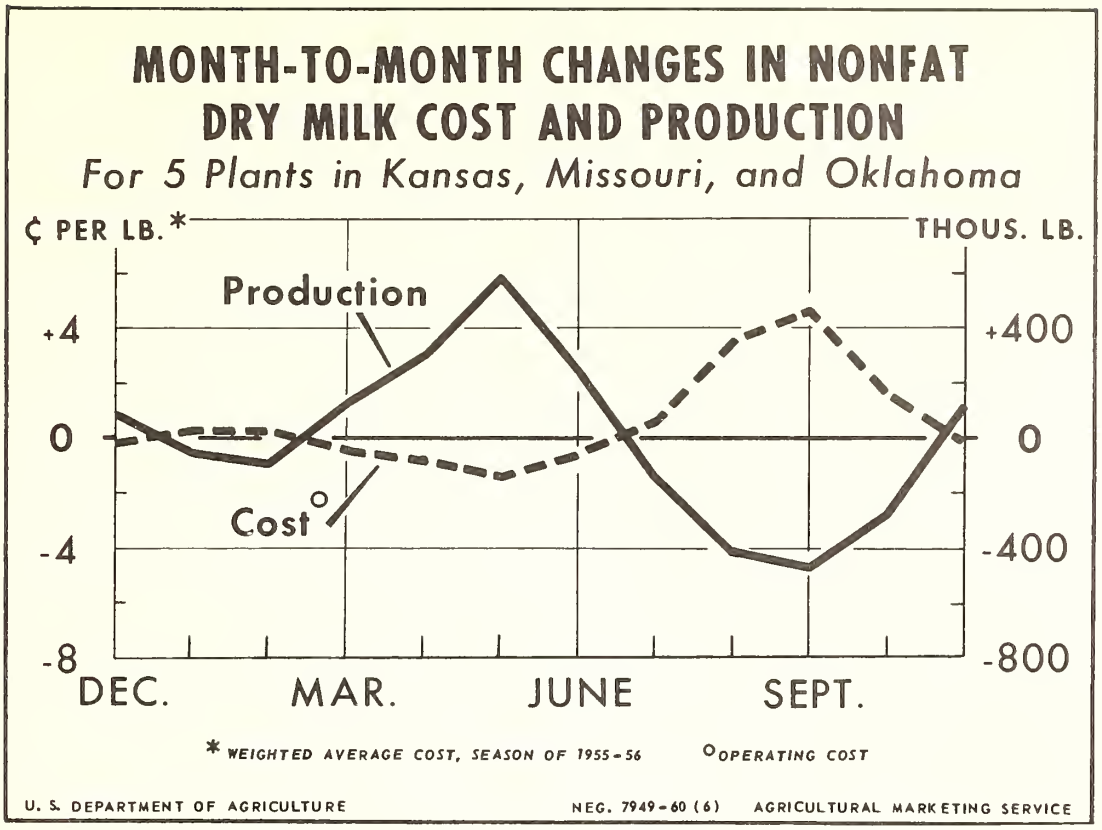
MONTH-TO-MONTH CHANGES IN NONFAT DRY MILK COST AND PRODUCTION
For 5 Plants in Kansas, Missouri, and Oklahoma
¢ PER LB.*
THOUS. LB.
Production
Cost°
+4
0
-4
-8
+400
0
-400
-800
DEC.
MAR.
JUNE
SEPT.
* WEIGHTED AVERAGE COST, SEASON OF 1955-56
° OPERATING COST
U. S. DEPARTMENT OF AGRICULTURE
NEG. 7949-60 (6)
AGRICULTURAL MARKETING SERVICE

Figure 6

APPENDIX

Cost Allocation Methodology [19]

Raw Materials

Butterfat to butter.--In accounting for butterfat going to butter, it was assumed that all butterfat received as farm-separated cream went into butter production. The remaining butterfat in butter was accounted for from the lowest costing cream and milk receipts. When possible, the price paid per pound of butterfat or the butterfat differential was used in pricing the butterfat going into the manufacture of butter.

In some cases, it was possible to collect only the price paid per 100 pounds for part of the milk utilized in making butter and nonfat dry milk. To ascertain values for the butterfat and skim milk components in such milk, a method was devised based on the applicable butter-nonfat dry milk formula used in computing the basic formula price in the respective Federal order market. An example of the method used is as follows:

$$v_1 = (a - b) \times c \times d$$
$$v_2 = (e - f) \times g \times (h/100)$$
$$v_3 = v_1 + v_2$$
$$i = 100\,(v_1/v_2)$$
$$v_4 = i \times j$$
$$v_5 = v_4/d$$
$$v_6 = j - v_4$$
$$v_7 = v_6/h$$

Where

v_1 = Value of butterfat in 100 pounds of milk
  a = Average monthly price for 92-score Chicago butter
  b = "Make" allowance
  c = 1 + overrun percentage
  d = Pounds of butterfat in 100 pounds milk used in making butter

v_2 = Value of skim milk in 100 pounds of milk used in making nonfat dry milk
  e = Average Chicago price for roller and spray nonfat dry milk
  f = "Make" allowance
  g = Yield factor
  h = Pounds of skim milk in 100 pounds milk

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[19] By necessity, one plant's own allocation methodology had to be accepted in allocating costs to butter and nonfat dry milk; this was true except for such costs as raw material, procurement, packaging supplies, and other ingredients used in making butter.

v_3 = Total value of 100 pounds milk

i = Percent that total value of butterfat is of total value of milk

v_4 = Value of butterfat in 100 pounds milk used in making butter

j = Price paid per 100 pounds milk

v_5 = Price per pound of butterfat used in making butter

v_6 = Value of skim milk in 100 pounds of milk used in making nonfat dry milk

v_7 = Price per pound of skim milk used in making nonfat dry milk

For example, if

a = \$0.61100; b = \$0.03; c = 1.20; d = 4.0; e = \$0.14355; f = \$0.055;

g = 8.5; h = .96; j = \$4.00

Then

v_1 = (\$0.61100 - \$0.03) x 1.20 x 4.0 = \$2.789
v_2 = (\$0.14355 - \$0.055) x 8.5 x .96 = \$0.723
v_3 = \$2.789 + \$0.723 = \$3.512
i = 100 (\$2.789/3.512) = 79.4
v_4 = .794 x \$4.00 = \$3.18
v_5 = \$3.18/4 = \$0.79500
v_6 = \$4.00 - \$3.18 = \$0.82
v_7 = \$0.82/96 = \$0.08542

Skim milk to nonfat dry milk.--Cost allocated to skim milk was the cost of the milk remaining after deducting the cost of butterfat. A cost per pound of skim milk was then computed by dividing the remaining cost by the pounds of skim milk in the whole milk.

Skim milk to buttermilk.--No cost was allocated to skim milk in farm-separated cream. Skim milk in plant-separated cream going to buttermilk was priced the same as that going to nonfat dry milk.

Patronage refunds.--Cash payments, only, to producers or other suppliers on the basis of current patronage were allocated to butterfat cost on the same basis used by the individual plant paying such cash patronage refunds. None was allocated to skim milk. Noncash distributions to patrons' equity reserves or other accounts were treated as net margins.

Personnel Costs

Fringe benefits, such as old-age security insurance, workmen's compensation, pensions, bonuses, State and Federal unemployment insurance, group insurance, etc, were allocated to personnel costs to get total labor cost. Information used in allocating labor cost was obtained by interview with each plant's superintendent and other employees. Where necessary, approximations were made as to the amount of time each employee spent in performing his different duties.

Various methods were used in allocating personnel costs to functions and then to butter and nonfat dry milk:

1. Hauling labor: Allocated directly to product handled and then to butter and nonfat dry milk on the basis of the weight of cream and skim milk going to these products.

2. Fieldmen labor: Allocated first to procured product, such as graded milk, manufacturing milk, and farm-separated cream, and then to butter and nonfat dry milk on the basis of the amounts produced from the different sources of milk and cream.

3. Milk receiving labor: Allocated to cream and skim milk separated on a weight basis, and then allocated to butter and nonfat dry milk on a percentage basis, according to the amount of cream to churn and skim milk to go into nonfat dry milk.

4. Separating labor: Included in general plant labor.

5. Condensing labor: Allocated to nonfat dry milk and butter using the estimated operating capacity of the condenser in producing condense containing varying percent solids.

6. Nonfat dry milk processing labor: In most cases, more than one type of milk powder was produced in each plant. The differences in estimated operating capacities in producing the various powders were used in determining the amount of labor to allocate to nonfat dry milk and butter (dry buttermilk when produced).

7. Butter manufacturing labor: All labor involved in processing of plant- and farm-separated cream (when purchased), buttermaking, printing, packaging, and loading out were charged directly to butter.

8. General plant labor: For each plant, general plant labor was broken down into two categories: General labor involved in producing all products; and general labor involved in the manufacturing operation only. Indirect labor that involved all products was allocated to butter and nonfat dry milk in proportion to the direct labor charged to these products. General labor on the manufacturing side only was allocated to butter and nonfat dry milk by using the percentages that direct manufacturing labor cost allocated to butter and nonfat dry milk were of total manufacturing plant labor.

9. General maintenance labor: Maintenance cost was first allocated to buildings, machinery, and equipment from estimates by plant superin-

tendent or office manager. The amount for building maintenance was included in building costs. The labor cost for machinery and equipment was allocated to each piece on the basis of use and age. The use made of each piece determined the amount allocated to butter and nonfat dry milk.

10. Office labor (including administrative and clerical salaries) was allocated to butter and nonfat dry milk on procurement and sales basis.

Depreciation

Actual plant records were used in assigning depreciation and rent costs to buildings, machinery, and equipment. Depreciation and rent charged to buildings was included in the building cost category. Depreciation and rent charged to machinery and equipment was allocated to butter and nonfat dry milk on a use basis. Depreciation and rent charged to general plant machinery [20] was allocated to butter and nonfat dry milk using the same methodology as that employed in the allocation of general plant labor.

Building and Utilities Costs [21]

Building costs were first allocated to function on a space basis. Cost allocated to space used in producing joint products was allocated to butter and nonfat dry milk by the same methodology as was used in allocating labor cost involved in these functions. Cost charged to general plant was allocated to butter and nonfat dry milk in the same ratios used for allocating total building cost.

Maintenance materials, repairs, and general plant supplies were allocated to butter and nonfat dry milk by cost function on the same basis as maintenance labor cost allocation.

It was beyond the scope of this report to collect engineering data which would be necessary in allocating each utility (water, fuel, electricity) to butter and nonfat dry milk on a use basis. Therefore, total utilities costs were allocated to butter and nonfat dry milk on the same basis as total machinery and equipment cost was allocated to these products.

General Administrative and Other Costs

Included in general administrative expenses were such costs as travel, office supplies and repairs, telephone, membership dues, interest, legal and auditing, dues and subscriptions, etc. These costs were allocated to butter and nonfat dry milk on a procurement and net sales basis. The same method was used in allocating office clerical and administrative salaries.

Raw materials (other than milk).--Costs of butter salt, coloring, and starters used in buttermaking were allocated directly to the product on a usage basis. Packaging costs were allocated to butter and nonfat dry milk also on a usage basis.

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[20] Includes machinery and equipment for separating, testing and laboratory, boiler, refrigeration, etc.

[21] Includes depreciation and rent, maintenance materials and repairs, plant maintenance labor, personal property tax, real estate tax, and insurance.

SEASONALITY FACTORS
Receipts and Utilization of Milk, Cream, and Skim Milk;
Cost of Butter and Nonfat Dry Milk Production

Table 15.--Milk, cream, and skim milk: Monthly percentage variation of receipts from annual average, 6 plants 1/

Plant	Month											
	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
A	-12.4	- 8.8	- 6.7	- 2.3	15.1	28.6	19.9	8.5	0.4	-10.4	-15.9	-16.0
B	-13.4	- 5.3	1.2	11.4	21.0	22.2	12.3	7.0	- 7.4	-15.7	-16.9	-16.2
C	-16.8	-14.2	- 9.5	5.6	13.3	19.4	8.9	2.7	- 5.1	- 5.1	- .9	1.6
D	7.1	4.6	5.9	7.6	11.5	- 3.6	- 5.4	- 8.5	-13.1	- 7.2	- 3.1	4.6
E	-24.3	-22.1	- 9.1	20.1	11.0	15.2	33.1	22.5	.8	- .3	-23.2	-23.8
F	15.0	9.3	12.9	- 4.7	3.4	12.2	- .6	-11.7	-17.9	-15.9	- 5.3	4.1
Average plants A-E 2/	-12.5	- 9.2	- 4.1	5.5	14.8	19.9	15.0	6.8	- 3.7	- 8.7	-12.6	-11.2
Average plants A-F 2/	- 6.1	- 5.0	- .4	3.2	12.1	18.2	11.4	2.5	- 6.9	-10.3	-11.0	- 7.7

1/ Computed from average daily receipts. Data for 1955-56. 2/ Weighted average.

Table 16.--Butterfat: Monthly percentage variation of available butterfat from annual average, 6 plants 1/

Plant	Month											
	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
A	- 6.4	- 4.8	- 9.4	- 3.2	11.0	26.6	14.2	7.2	- 2.9	- 8.5	-13.5	-10.7
B	-18.9	- 7.5	1.1	9.7	23.4	29.8	23.8	12.7	- 6.7	-20.6	-23.4	-23.3
C	-10.5	- 8.6	- 3.4	5.3	11.6	18.5	8.1	.5	- 8.9	- 9.1	- 5.0	1.7
D	11.6	8.9	6.3	5.2	5.9	- 5.0	- 5.2	-10.3	-15.8	- 8.4	- 1.9	9.5
E	-13.9	-10.0	- .8	7.7	- 1.4	- 2.1	20.4	24.9	10.9	- 1.7	-18.8	-15.3
F	5.6	12.8	.5	4.4	-10.8	- 1.6	14.2	2.3	- 8.5	-15.4	-12.9	9.5
Average plants A-E 2/	-11.0	- 5.8	- 2.2	4.9	13.7	20.3	15.8	8.8	- 4.7	-12.2	-15.4	-12.2
Average plants A-F 2/	- 7.2	- 1.6	- 1.6	4.8	8.2	15.3	15.4	7.3	- 5.5	-12.9	-14.8	- 7.2

1/ Computed from average daily receipts. Data for 1955-56. 2/ Weighted average.

Table 17.--Nonfat dry milk: Monthly percentage variation of production from annual average, 6 plants 1/

Plant	Month											
	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
A	46.0	- 5.7	- 8.8	6.3	19.3	100.2	64.8	-38.1	-79.3	-80.0	-60.5	36.6
B	- 2.9	8.2	21.9	42.5	61.1	61.9	24.5	20.3	-74.1	-93.8	-45.8	-23.6
C	-17.0	-15.8	-12.4	8.6	29.0	33.0	19.5	1.0	-21.9	-17.7	-10.7	4.9
D	4.4	-43.6	1.1	-24.6	39.4	53.7	52.7	.9	-16.8	-39.6	- 9.5	-17.2
E	- 3.5	- 6.4	-41.3	40.4	152.1	130.1	-38.4	2/	-67.8	-96.4	-45.0	74.9
F	47.3	37.2	31.2	-30.6	- 5.7	22.0	- 1.1	-24.6	-47.5	-44.7	-11.6	30.5
Average plants A-E 3/	10.7	- 9.3	- 7.2	13.7	41.5	71.5	34.0	-18.7	-54.6	-60.4	-37.2	16.5
Average plants A-F 3/	20.0	2.6	2.6	2.4	29.4	58.8	25.1	-20.2	-52.8	-56.4	-30.7	20.1

1/ Computed from average daily production. Data for 1955-56. 2/ No nonfat dry milk produced. 3/ Weighted average.

Table 18.--Butter: Monthly percentage variation of production from annual average, 6 plants 1/

Plant	Month											
	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
A	83.5	-86.3	-27.0	28.2	24.6	74.0	51.1	-54.1	-91.8	-78.1	34.7	98.8
B	-20.6	- 7.4	1.1	11.2	27.5	33.5	26.9	10.8	- 8.7	-24.1	-27.7	-22.1
C	- .8	3.6	8.5	23.0	40.7	34.9	27.4	-12.9	-59.1	-57.4	-24.6	18.2
D	27.1	-10.0	- .6	-11.6	2.1	28.1	31.2	-18.9	-20.4	-52.1	8.8	16.4
E	41.7	60.4	49.8	63.8	73.8	17.0	-74.8	-93.8	2/	2/	-39.9	107.1
F	11.2	14.7	12.9	- 3.6	.4	13.5	10.6	- 2.5	-12.7	-27.8	-20.0	4.2
Average plants A-E 3/	- .8	- 9.5	2.5	12.0	31.8	36.9	23.4	- 7.8	-33.0	-41.6	-20.3	7.3
Average plants A-F 3/	2.7	- 2.5	5.5	7.4	22.7	30.1	19.7	- 6.3	-27.2	-37.6	-20.2	6.4

1/ Computed from average daily production. Data for 1955-56. 2/ No butter produced. 3/ Weighted average.

Table 19.--Skim milk: Monthly and annual percentages of available skim milk utilized in producing nonfat dry milk, 6 plants 1/

Plant	Month												Annual average
	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
A	45.3	27.5	27.2	31.0	28.6	41.4	37.8	16.3	3.8	6.2	11.4	44.0	27.1
B	43.2	44.9	47.8	50.6	53.7	54.6	46.7	46.2	11.3	2.8	25.0	34.8	39.9
C	57.3	56.1	56.2	61.0	73.4	71.2	65.3	59.6	49.4	52.0	53.4	59.2	60.0
D	14.7	8.5	14.8	10.7	19.5	23.6	24.3	17.0	14.6	10.0	14.3	12.6	15.3
E	25.6	23.3	12.9	22.4	44.0	40.2	8.8	2/	6.9	.8	10.3	45.5	19.5
F	49.8	47.7	43.8	29.1	35.7	41.8	38.5	33.2	25.3	25.8	36.9	47.8	38.8
Average all plants 3/	42.7	35.9	34.9	34.0	39.7	45.6	38.0	27.2	17.0	16.9	26.0	43.0	33.8

1/ Data for 1955-56. 2/ No skim milk utilized in making nonfat dry milk. 3/ Based on weighted averages.

Table 20.--Butterfat: Monthly and annual percentages of total available butterfat utilized in producing butter, 6 plants 1/

Plant	Month												Annual average
	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
A	39.9	3.0	16.6	15.2	23.0	27.6	26.8	8.7	1.8	4.9	30.8	44.9	20.2
B	84.2	87.2	87.2	88.4	90.0	90.0	89.4	89.1	85.7	83.0	82.3	83.3	87.1
C	71.3	72.8	72.2	75.0	80.6	72.6	75.4	55.4	29.6	29.9	50.4	74.6	64.1
D	20.3	14.7	16.7	15.0	17.2	24.1	24.7	15.9	16.9	9.3	20.3	18.9	17.9
E	44.4	47.3	40.1	40.3	46.4	31.5	5.6	1.4	2/	2/	20.0	65.5	26.6
F	76.2	73.5	81.4	66.7	80.9	83.5	70.8	69.4	68.9	62.8	66.6	68.8	72.5
Average all plants 3/	62.8	56.4	61.1	58.3	64.4	64.1	59.1	50.7	44.0	40.8	53.1	64.0	56.9

1/ Data for 1955-56. 2/ No butterfat utilized in making butter. 3/ Based on weighted averages.

Table 21.--Butter: Relationship of seasonal variations in operating cost and production, 5 plants

Month	Plant										All plants 1/	
	A		B		C		D		E			
	Percent of total		Percent of total		Percent of total		Percent of total		Percent of total		Percent of total	
	Cost 2/	Production	Cost 2/	Production	Cost 2/	Production	Cost 2/	Production	Cost 2/	Production	Cost 2/	Production
December	14.2	15.5	7.3	6.7	8.1	8.4	10.5	10.8	12.2	12.0	9.0	8.4
January	3.4	1.2	7.7	7.9	8.2	8.8	8.1	7.6	10.9	13.6	7.5	7.7
February	7.0	5.8	7.8	8.0	8.4	8.6	8.0	7.6	10.8	11.5	8.0	8.1
March	6.8	6.1	8.4	9.4	9.2	10.4	10.4	7.5	11.4	13.9	8.7	9.5
April	10.4	10.2	9.0	10.5	9.7	11.5	10.0	8.4	12.0	14.3	9.6	10.8
May	12.1	14.7	9.3	11.3	10.0	11.4	9.1	10.9	11.0	10.0	10.0	11.6
June	11.1	12.4	9.2	10.4	9.9	10.4	9.0	10.8	4.4	2.1	9.4	10.1
July	4.8	3.9	9.3	9.4	8.9	7.4	7.6	6.9	3.4	.5	8.1	7.8
August	2.3	.7	8.7	7.7	6.8	3.5	6.5	6.8	1.2	3/	6.7	5.7
September	4.0	1.8	7.9	6.2	5.8	3.5	5.4	3.9	1.1	3/	6.2	4.8
October	9.7	11.4	7.9	6.1	7.0	6.4	7.2	9.2	7.1	5.1	7.8	6.7
November	14.2	16.3	7.5	6.4	8.0	9.7	8.2	9.6	14.5	17.0	9.0	8.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Weighted average. 2/ Total production costs less raw materials costs. Data for 1955-56. 3/ No butter produced.

Table 22.--Nonfat dry milk: Relationship of seasonal variations in operating cost and production, 5 plants

Month	Plant										All plants 1/	
	A		B		C		D		E			
	Percent of total		Percent of total		Percent of total		Percent of total		Percent of total		Percent of total	
	Cost 2/	Production	Cost 2/	Production	Cost 2/	Production	Cost 2/	Production	Cost 2/	Production	Cost 2/	Production
December	10.6	12.4	9.1	8.2	8.0	7.0	8.2	8.9	8.2	8.2	9.2	9.4
January	8.4	8.0	9.1	9.2	7.4	7.1	6.7	4.8	7.7	8.0	7.9	7.7
February	7.8	7.2	9.2	9.7	7.0	6.9	8.1	7.7	6.4	4.5	7.6	7.3
March	8.8	9.0	10.2	12.1	8.1	9.2	9.6	6.4	9.5	11.9	8.9	9.6
April	9.4	9.8	10.9	13.2	9.1	10.6	12.8	11.5	13.0	20.7	10.2	11.6
May	12.6	16.9	11.1	13.7	9.7	11.3	8.8	13.0	13.8	19.5	11.4	14.5
June	12.0	13.5	9.6	10.2	9.1	9.8	8.6	12.5	7.3	5.1	10.2	11.0
July	7.7	5.3	10.3	10.2	8.7	8.6	8.9	8.6	3.9	3/	8.0	6.9
August	4.1	1.8	3.4	2.2	8.0	6.6	7.6	7.1	6.6	2.7	5.7	3.8
September	4.2	1.6	1.8	.5	8.1	6.7	6.5	5.0	5.1	.3	5.3	3.3
October	4.5	3.3	7.1	4.6	8.3	7.6	7.1	7.7	6.5	4.7	6.3	5.3
November	9.9	11.2	8.2	6.2	8.5	8.6	7.1	6.8	12.0	14.4	9.3	9.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Weighted average. 2/ Total production costs less raw material costs. Data for 1955-56. 3/ No nonfat dry milk produced.

Table 23.--Butter: Seasonal variation in operating cost per pound, 5 plants 1/

Month	Plant					All plants 2/
	A	B	C	D	E	
	Cents	Cents	Cents	Cents	Cents	Cents
December	5.56	3.77	6.53	8.28	4.88	4.93
January	17.81	3.41	6.34	8.75	3.83	4.50
February	7.39	3.37	6.53	9.06	4.54	4.60
March	6.79	3.07	5.97	10.90	3.92	4.20
April	6.20	2.96	5.68	10.73	4.03	4.11
May	5.01	2.85	5.90	7.76	5.35	3.99
June	5.46	3.07	6.40	7.63	10.34	4.28
July	7.63	3.43	8.12	10.08	31.82	4.80
August	20.77	3.91	13.30	8.87	3/	5.40
September	13.85	4.40	11.10	12.83	3/	5.93
October	5.17	4.48	7.40	7.74	6.74	5.39
November	5.30	4.10	5.51	7.78	4.08	4.76
Average 2/	6.09	3.47	6.74	8.90	4.71	4.62

1/ Based on total production costs less raw materials cost. Data for 1955-56.
2/ Weighted averages.
3/ No butter produced.

Table 24.--Nonfat dry milk: Seasonal variation in operating cost per pound, 5 plants 1/

Month	Plant					All plants 2/
	A	B	C	D	E	
	Cents	Cents	Cents	Cents	Cents	Cents
December	6.60	4.68	6.74	8.85	8.74	6.69
January	8.48	4.24	6.13	13.52	8.45	7.19
February	8.81	4.06	6.01	10.07	12.46	7.22
March	7.91	3.59	5.24	14.43	6.98	6.39
April	7.83	3.49	5.13	10.69	5.50	6.09
May	6.00	3.45	5.10	6.51	6.20	5.45
June	6.99	3.99	5.52	6.56	12.78	6.31
July	11.62	4.30	6.06	9.97	3/	7.50
August	18.85	6.59	7.18	10.39	21.05	10.36
September	20.52	15.42	7.08	12.51	45.48	11.54
October	12.46	6.53	6.51	8.93	12.24	8.54
November	7.20	5.57	5.85	10.00	7.35	6.80
Average 2/	8.06	4.25	5.94	9.61	8.43	6.91

1/ Based on total production costs less raw materials cost. Data for 1955-56.
2/ Weighted averages.
3/ No nonfat dry milk produced.

Table 25.--Nonfat dry milk: Total cost of production, per pound, 6 plants 1/

Month	Plant						All plants 2/
	A	B	C	D	E	F	
	Cents	Cents	Cents	Cents	Cents	Cents	Cents
December	14.31	13.08	15.65	14.62	15.61	10.25	13.23
January	15.74	12.62	15.74	19.92	14.99	10.56	13.65
February	16.71	12.29	15.54	16.29	19.32	10.25	13.84
March	15.39	11.43	12.68	19.99	12.80	9.71	12.97
April	15.07	11.29	13.16	15.96	11.15	10.43	12.75
May	12.92	11.08	13.80	11.91	11.82	10.15	12.20
June	14.25	11.52	14.48	12.16	18.19	10.57	13.24
July	19.19	11.72	15.79	20.80	3/	10.93	14.90
August	23.54	14.00	16.64	16.38	29.39	11.14	16.25
September	27.63	23.27	16.23	18.04	158.24	10.52	16.77
October	17.14	14.47	13.66	14.87	16.77	10.11	13.34
November	14.33	13.33	13.81	15.24	13.11	10.12	12.89
Average 2/	15.26	12.10	14.60	15.72	14.35	10.36	13.44

1/ Data for 1955-56.
2/ Weighted averages.
3/ No nonfat dry milk produced.

Cost by Elements

Table 26.--Nonfat dry milk: Cost of raw materials per pound, 5 plants 1/

Month	Plant					All plants 2/
	A	B	C	D	E	
	Cents	Cents	Cents	Cents	Cents	Cents
December	7.40	8.40	8.89	5.76	6.86	7.77
January	7.25	8.38	9.61	6.39	6.53	8.09
February	7.96	8.22	9.52	6.22	6.86	8.33
March	7.54	7.83	7.45	5.56	5.81	7.30
April	7.28	7.79	8.03	5.27	5.65	7.23
May	6.95	7.63	8.71	5.41	5.61	7.27
June	7.08	7.54	8.96	5.60	5.42	7.54
July	7.34	7.41	9.72	10.84	3/	8.60
August	4.85	7.42	9.46	5.99	8.34	8.05
September	7.19	7.85	9.14	5.54	7.83	8.40
October	6.20	7.94	7.15	5.94	4.53	6.74
November	7.18	7.76	7.96	5.24	5.77	5.92
Average 2/	7.19	7.85	8.66	6.11	5.92	7.61

1/ Skim milk only. Data for 1955-56.
2/ Weighted averages.
3/ No nonfat dry milk produced.

Table 27.--Nonfat dry milk: Total labor cost per pound, 5 plants 1/

Month	Plant A	Plant B	Plant C	Plant D	Plant E	All plants 2/
	Cents	Cents	Cents	Cents	Cents	Cents
December	3.50	2.46	3.22	2.72	3.44	3.23
January	3.95	2.27	3.05	4.49	3.15	3.31
February	4.39	2.07	3.13	3.20	3.68	3.39
March	4.32	2.00	2.85	4.35	2.36	3.19
April	4.13	1.79	2.51	2.80	1.71	2.78
May	3.52	1.77	2.69	2.00	1.96	2.78
June	3.86	2.14	3.09	2.09	1.83	3.17
July	5.75	2.27	3.46	2.86	3/	3.77
August	10.98	3.53	3.96	3.14	3.16	4.95
September	11.11	8.74	3.84	3.89	10.15	5.35
October	5.65	3.35	3.41	2.85	2.14	3.78
November	3.56	2.84	3.12	2.86	2.40	3.17
Average 2/	4.24	2.23	3.14	2.90	2.37	3.32

1/ Labor cost for procuring, receiving, processing, loading out, and administrative. Data for 1955-56.

2/ Weighted averages.

3/ No nonfat dry milk produced.

Table 28.--Nonfat dry milk: Cost of purchased services and supplies per pound, 5 plants 1/

Month	Plant A	Plant B	Plant C	Plant D	Plant E	All plants 2/
	Cents	Cents	Cents	Cents	Cents	Cents
December	1.95	1.60	2.70	3.95	2.68	2.26
January	2.85	1.43	2.36	4.88	2.58	2.49
February	2.56	1.49	2.16	4.15	3.41	2.36
March	2.22	1.17	1.81	4.81	2.17	1.98
April	2.13	1.16	2.10	3.70	1.97	2.02
May	1.39	1.28	1.89	3.20	2.09	1.68
June	1.75	1.28	1.88	3.15	3.76	1.89
July	2.40	1.49	2.02	4.32	3/	2.18
August	4.87	1.90	2.53	4.56	4.90	3.23
September	5.83	4.68	2.54	4.65	34.27	3.64
October	4.44	2.21	2.46	3.99	3.09	3.06
November	2.38	1.96	2.15	4.05	2.32	2.33
Average 2/	2.25	1.45	2.18	3.96	2.56	2.23

1/ Includes packaging supplies, general plant supplies, office supplies, and utilities. Data for 1955-56.

2/ Weighted averages.

3/ No nonfat dry milk produced.

Table 29.--Nonfat dry milk: Cost of facilities per pound, 5 plants 1/

Month	Plant					All plants 2/
	A	B	C	D	E	
	Cents	Cents	Cents	Cents	Cents	Cents
December	1.15	0.62	0.84	2.18	2.62	1.20
January	1.68	.54	.72	4.15	2.72	1.39
February	1.86	.50	.72	2.72	5.37	1.47
March	1.37	.42	.58	5.27	2.45	1.22
April	1.57	.54	.52	4.19	1.82	1.29
May	1.09	.40	.52	1.31	2.15	.99
June	1.38	.57	.55	1.32	7.17	1.25
July	3.47	.54	.58	2.79	3/	1.55
August	3.00	1.16	.69	2.69	12.99	2.18
September	3.58	2.00	.70	3.97	106.00	2.55
October	2.37	.97	.64	2.09	7.01	1.70
November	1.26	.77	.58	3.09	2.63	1.30
Average 2/	1.57	.57	.62	2.75	3.50	1.36

1/ Includes depreciation, maintenance, taxes, insurance, etc., on building, machinery, and equipment. Data for 1955-56.

2/ Weighted averages.

3/ No nonfat dry milk produced.

Cost by Operating Function

Table 30.--Nonfat dry milk: Procurement cost per pound, 5 plants 1/

Month	Plant					All plants 2/
	A	B	C	D	E	
	Cents	Cents	Cents	Cents	Cents	Cents
December	8.23	8.45	9.16	5.82	7.83	8.32
January	7.74	8.41	9.80	6.50	7.73	8.45
February	8.74	8.25	9.82	6.24	8.56	8.80
March	8.42	7.85	7.74	5.78	6.62	7.80
April	8.11	7.81	8.28	5.37	6.19	7.65
May	7.77	7.64	8.95	5.49	6.32	7.77
June	7.97	7.56	9.25	5.66	5.60	8.05
July	8.27	7.43	10.03	10.96	3/	9.00
August	5.58	7.52	9.85	6.17	9.08	8.47
September	8.33	9.61	9.43	5.73	11.16	8.89
October	6.94	8.06	7.36	6.00	5.12	7.07
November	8.00	7.80	8.25	5.29	6.38	7.73
Average 2/	8.01	7.89	8.94	6.21	6.69	8.08

1/ Includes cost of milk, cream, skim milk; fieldmen costs; and hauling charges. Data for 1955-56.

2/ Weighted averages.

3/ No nonfat dry milk produced.

Table 31.--Nonfat dry milk: Receiving costs per pound, 5 plants 1/

Month	Plant					All plants 2/
	A	B	C	D	E	
	Cents	Cents	Cents	Cents	Cents	Cents
December	0.69	0.79	1.11	0.49	0.45	0.78
January	.70	.77	1.05	.54	.42	.79
February	.71	.77	.80	.53	.45	.73
March	.70	.75	.75	.50	.40	.69
April	.61	.71	.75	.51	.38	.63
May	.52	.70	.78	.42	.32	.59
June	.56	.86	.90	.48	.36	.69
July	.69	.87	.90	.52	3/	.81
August	.40	.85	.80	.53	.40	.69
September	.76	1.05	.80	.55	1.55	.78
October	.65	.97	.82	.50	.33	.73
November	.76	.91	.78	.53	.50	.74
Average 2/	.64	.79	.85	.50	.40	.70

1/ Includes labor, cost of facilities, and purchased services and supplies. Data for 1955-56.
2/ Weighted averages.
3/ No nonfat dry milk produced.

Table 32.--Nonfat dry milk: Processing costs per pound, 5 plants 1/

Month	Plant					All plants 2/
	A	B	C	D	E	
	Cents	Cents	Cents	Cents	Cents	Cents
December	4.45	1.91	4.02	6.50	5.95	4.57
January	6.45	1.74	3.58	10.75	5.23	5.27
February	6.40	1.59	3.50	7.79	8.79	5.16
March	5.47	1.39	3.11	11.19	4.97	4.10
April	5.62	1.45	2.95	7.71	3.83	4.43
May	4.12	1.36	3.09	4.19	4.31	3.79
June	5.00	1.71	3.19	4.08	10.96	4.39
July	9.35	1.79	3.73	7.10	3/	5.48
August	16.28	3.66	4.64	7.00	18.62	7.79
September	16.89	5.10	4.72	9.04	137.18	8.45
October	8.74	2.84	4.20	6.42	10.30	6.00
November	4.61	2.28	3.64	7.56	4.86	4.61
Average 2/	5.80	1.75	3.61	6.91	6.19	4.57

1/ Includes labor, cost of facilities, and purchased services and supplies used in condensing and drying. Data for 1955-56.
2/ Weighted averages.
3/ No nonfat dry milk produced.

Table 33.--Nonfat dry milk: Administrative costs per pound, 5 plants 1/

Month	Plant					All plants 2/
	A	B	C	D	E	
	Cents	Cents	Cents	Cents	Cents	Cents
December	0.94	1.92	1.36	1.81	1.37	1.26
January	.84	1.70	1.31	2.13	1.60	1.26
February	.86	1.67	1.42	1.73	1.52	1.30
March	.79	1.43	1.08	2.53	.81	1.08
April	.74	1.32	1.18	2.36	.74	1.07
May	.51	1.39	.98	1.82	.86	.87
June	.71	1.40	1.14	1.93	.87	1.03
July	.87	1.63	1.13	2.23	3/	1.26
August	1.28	1.97	1.34	2.68	1.29	1.54
September	1.65	7.51	1.28	2.71	8.35	1.69
October	.81	2.60	1.28	1.95	1.03	1.39
November	.96	2.33	1.15	1.86	1.38	1.25
Average 2/	.80	1.67	1.20	2.10	1.07	1.17

1/ Includes general office and administrative labor, office supplies, cost of facilities, etc. Data for 1955-56.

2/ Weighted averages.

3/ No nonfat dry milk produced.

Table 34.--Butter: Total cost of production, per pound, 6 plants 1/

Month	Plant						All plants 2/
	A	B	C	D	E	F	
	Cents	Cents	Cents	Cents	Cents	Cents	Cents
December	60.12	58.70	56.32	66.15	60.34	59.82	59.21
January	70.00	59.24	56.30	66.05	57.92	60.26	59.30
February	63.12	59.20	56.04	66.22	58.48	59.00	58.98
March	58.19	56.38	55.55	68.62	57.48	56.00	56.52
April	56.70	57.14	56.25	66.58	55.75	54.09	56.32
May	54.53	57.43	55.88	63.19	55.07	55.90	56.56
June	55.57	55.97	56.48	69.63	61.06	55.98	56.36
July	58.65	58.82	57.97	64.02	84.68	56.86	58.28
August	73.59	57.59	63.30	64.08	3/	57.67	58.34
September	65.60	58.24	59.66	67.81	3/	58.32	58.74
October	56.20	60.03	59.27	64.13	60.58	60.73	59.78
November	59.75	57.19	59.95	66.57	60.90	59.99	59.28
Average 2/	58.18	57.86	57.19	66.05	58.47	57.86	57.99

1/ Data for 1955-56.

2/ Weighted averages.

3/ No butter produced.

Cost by Elements

Table 35.--Butter: Raw materials cost per pound, 5 plants 1/

Month	Plant					All plants 2/
	A	B	C	D	E	
	Cents	Cents	Cents	Cents	Cents	Cents
December	54.57	54.93	49.79	57.46	55.45	54.00
January	52.19	55.83	49.97	56.66	54.08	54.31
February	55.73	55.83	49.50	56.84	53.94	54.38
March	51.40	53.31	49.59	56.27	53.55	52.48
April	50.50	54.19	50.58	55.92	51.72	52.92
May	49.52	54.59	49.98	55.76	49.72	52.81
June	50.12	52.90	50.08	62.19	50.72	52.24
July	51.02	55.39	49.86	54.18	52.85	54.11
August	52.82	53.68	50.00	55.57	3/	53.30
September	51.75	53.84	48.56	55.57	3/	53.05
October	51.04	55.55	51.87	57.27	53.83	54.07
November	54.46	53.08	54.38	58.92	56.82	54.25
Average 2/	52.08	54.39	50.45	57.15	53.76	53.43

1/ Includes cost of cream and other ingredients used in making butter. Data for 1955-56.

2/ Weighted averages.

3/ No butter produced during these months.

Table 36.--Butter: Total labor cost per pound, 5 plants 1/

Month	Plant					All plants 2/
	A	B	C	D	E	
	Cents	Cents	Cents	Cents	Cents	Cents
December	3.44	2.17	3.49	2.92	2.53	2.73
January	4.71	1.94	3.46	2.89	1.97	2.35
February	4.14	1.88	3.94	2.92	2.50	2.56
March	3.86	1.78	3.66	3.33	2.05	2.38
April	3.83	1.63	3.26	2.85	2.10	2.25
May	3.27	1.55	3.69	2.71	2.72	2.28
June	3.43	1.73	4.09	2.83	3.33	2.47
July	3.00	1.94	5.21	3.14	8.44	2.65
August	9.03	2.29	8.91	2.91	3/	3.18
September	6.47	2.57	7.03	4.09	3/	3.39
October	3.15	2.57	4.62	2.57	3.23	3.08
November	3.23	2.29	3.44	2.60	1.86	2.68
Average 2/	3.54	1.96	4.11	2.91	2.31	2.59

1/ Includes procuring, receiving, processing, printing, loading out, and administrative. Data for 1955-56.

2/ Weighted averages.

3/ No butter produced.

Table 37.--Butter: Costs of purchased services and supplies per pound, 5 plants 1/

Month	Plant					All plants 2/
	A	B	C	D	E	
	Cents	Cents	Cents	Cents	Cents	Cents
December	1.68	1.20	2.23	3.92	1.32	1.60
January	7.63	1.11	2.18	3.74	1.08	1.52
February	2.06	1.16	1.87	4.01	1.33	1.47
March	1.91	.99	1.69	4.20	1.25	1.30
April	1.63	.97	1.84	3.93	1.22	1.30
May	1.18	1.04	1.63	3.79	1.55	1.27
June	1.35	.99	1.68	3.58	2.50	1.27
July	2.19	1.15	2.03	4.39	5.64	1.46
August	4.69	1.15	2.95	3.83	3/	1.49
September	4.56	1.32	2.62	4.46	3/	1.71
October	1.47	1.40	1.93	3.71	1.75	1.61
November	1.64	1.35	1.43	3.50	1.14	1.48
Average 2/	1.71	1.13	1.90	3.87	1.33	1.43

1/ Includes packaging supplies, general plant supplies, office supplies, and utilities. Data for 1955-56.

2/ Weighted averages.

3/ No butter produced.

Table 38.--Butter: Cost of facilities per pound, 5 plants 1/

Month	Plant					All plants 2/
	A	B	C	D	E	
	Cents	Cents	Cents	Cents	Cents	Cents
December	0.44	0.40	0.81	1.44	1.03	0.60
January	5.47	.36	.70	2.12	.78	.63
February	1.19	.33	.72	2.13	.71	.57
March	1.02	.30	.62	3.37	.62	.52
April	.74	.36	.58	3.95	.71	.56
May	.56	.26	.58	1.26	1.08	.44
June	.68	.35	.63	1.22	4.51	.54
July	2.44	.34	.88	2.55	17.74	.69
August	7.05	.47	1.44	2.13	3/	.73
September	2.82	.51	1.45	4.28	3/	.83
October	.55	.51	.85	1.46	1.76	.70
November	.43	.46	.64	1.68	1.08	.60
Average 2/	.84	.38	.73	2.12	1.07	.60

1/ Includes depreciation, maintenance, taxes, insurance, etc., on building, machinery, and equipment. Data for 1955-56.

2/ Weighted averages.

3/ No butter produced.

Costs by Operating Functions

Table 39.--Butter: Procurement cost per pound, 5 plants 1/

Month	Plant					All plants 2/
	A	B	C	D	E	
	Cents	Cents	Cents	Cents	Cents	Cents
December	55.57	55.08	50.89	57.73	55.82	54.53
January	52.80	55.98	51.03	56.94	54.43	54.69
February	56.82	55.96	50.64	57.15	54.31	54.82
March	52.55	53.41	50.68	56.52	53.99	52.89
April	51.61	54.28	51.51	56.24	52.23	53.32
May	50.58	54.67	50.92	56.07	50.68	53.24
June	51.20	53.01	51.16	62.60	51.62	52.68
July	51.96	55.49	51.18	54.45	54.23	54.49
August	54.24	53.82	52.31	55.74	3/	53.71
September	53.12	54.00	50.57	55.73	3/	53.52
October	52.01	55.73	53.10	57.60	54.76	54.62
November	55.43	53.26	55.32	59.21	57.07	54.75
Average 2/	53.12	54.51	51.59	57.44	54.24	53.87

1/ Includes cost of cream to churn, fieldmen expenses, hauling charges, etc. Data for 1955-56.
2/ Weighted averages.
3/ No butter produced.

Table 40.--Butter: Receiving costs per pound, 5 plants 1/

Month	Plant					All plants 2/
	A	B	C	D	E	
	Cents	Cents	Cents	Cents	Cents	Cents
December	0.13	0.14	0.23	0.09	0.04	0.15
January	.16	.14	.29	.09	.04	.16
February	.15	.14	.35	.10	.05	.17
March	.14	.14	.30	.09	.04	.16
April	.12	.13	.27	.10	.05	.15
May	.10	.12	.39	.08	.06	.17
June	.11	.15	.40	.09	.07	.19
July	.13	.16	.50	.10	.07	.22
August	.12	.15	1.16	.10	3/	.27
September	.14	.18	.81	.10	3/	.27
October	.13	.17	.30	.10	.09	.18
November	.16	.15	.20	.09	.04	.15
Average 2/	.13	.15	.37	.09	.05	.18

1/ Includes labor, cost of facilities, and purchased services and supplies. Data for 1955-56.
2/ Weighted averages.
3/ No butter produced.

Table 41.--Butter: Processing costs per pound, 5 plants 1/

Month	Plant					All plants 2/
	A	B	C	D	E	
	Cents	Cents	Cents	Cents	Cents	Cents
December	3.22	2.43	4.02	6.05	2.93	3.07
January	16.01	2.17	3.80	7.36	2.44	2.93
February	5.13	2.13	3.75	7.48	2.54	2.86
March	4.61	1.98	3.56	10.05	2.33	2.70
April	4.05	1.96	3.37	8.50	2.51	2.64
May	3.21	1.83	3.58	4.90	3.47	2.51
June	3.75	2.04	3.82	4.93	7.96	2.77
July	6.24	2.23	5.17	7.85	24.00	3.20
August	16.49	2.66	8.68	7.16	3/	3.92
September	10.32	3.04	7.53	10.39	3/	4.13
October	3.07	2.87	4.84	4.65	4.67	3.42
November	3.02	2.54	3.37	5.66	2.62	2.91
Average 2/	3.99	2.26	4.14	6.73	2.98	2.99

1/ Includes labor, cost of facilities, and purchased services and supplies. Data for 1955-56.

2/ Weighted averages.

3/ No butter produced.

Table 42.--Butter: Administrative costs per pound, 5 plants 1/

Month	Plant					All plants 2/
	A	B	C	D	E	
	Cents	Cents	Cents	Cents	Cents	Cents
December	1.20	1.04	1.18	2.28	1.54	1.19
January	1.04	.96	1.18	1.66	1.01	1.03
February	1.02	.98	1.30	1.48	1.58	1.11
March	.90	.85	1.02	1.96	1.11	.94
April	.92	.77	1.10	1.74	.96	.89
May	.63	.81	.98	2.14	.86	.86
June	.52	.78	1.10	2.01	1.41	.86
July	.32	.95	1.11	1.62	6.38	.99
August	2.75	.97	1.16	1.08	3/	1.02
September	2.02	1.03	.75	1.58	3/	1.04
October	.99	1.26	1.03	1.79	1.06	1.18
November	1.15	1.24	1.05	1.61	1.16	1.18
Average 2/	.93	.94	1.09	1.79	1.20	1.01

1/ Includes general office and administrative labor, office supplies, cost of facilities, etc. Data for 1955-56.

2/ Weighted averages.

3/ No butter produced.

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